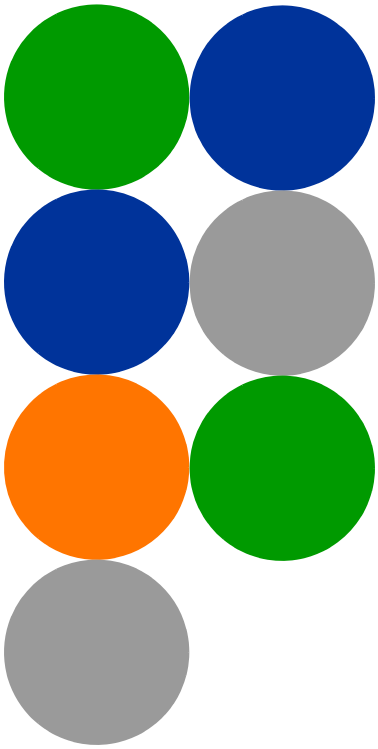
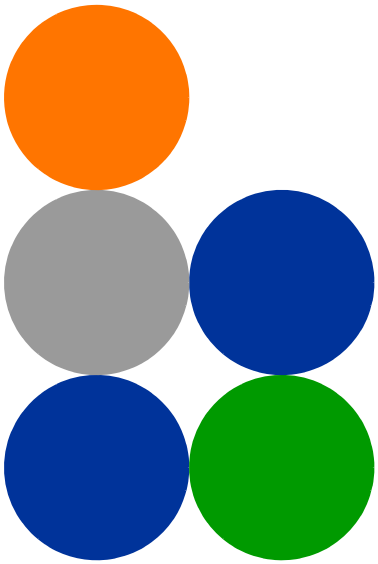


StarSuite Portal



User Manual

AlvariSTAR Infrastructure Software Version: 5.0
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Document History

Changed Item	Description	Date
First publication of a User Manual for a new product		June 2011
"About StarSuite Portal" Sections 1.3.1, 2.6.3.5, 2.7.3.1, 2.7.3.4, 2.7.4.4, 2.7.4.5, 2.7.4.6.3, 2.8.2.2,	Support for Extreme	Infrastructure 4.8.3 August 2011
Prerequisites Section 1.2	Updated supported browsers	Infrastructure 4.8.3 August 2011
Viewing Site Details Section 2.7.4.6	3 KPI tabs for Extreme instead of 1: Sector KPIs, BS KPIs, BTS KPIs New KPIs (in BS KPI tabs): UL Frame Utilization, DL Frame Utilization	Infrastructure 4.8.3 August 2011
Simple Search Section 2.6.2	Improved search functionality	Infrastructure 5.0 August 2011
Performing a Custom Search Section 2.6.3.2	Updated, improved search functionality	Infrastructure 5.0 August 2011
Performing a Previously Saved Search Section 2.6.3.3	Updated (tool-tip support), changed location in manual.	Infrastructure 5.0 August 2011
Deleting a Previously Saved Search Section 2.6.3.4	New feature	Infrastructure 5.0 August 2011
Accessing the Portal Section 2.1	New: HTTPS support	Infrastructure 5.0 August 2011
Sectors Tab Section 2.7.4.6.2	New features: Show Neighbor(s), Show CPEs	Infrastructure 5.0 August 2011
Link To Third Party Web Location Sections 1.3.8, 2.2, 2.3	New feature	Infrastructure 5.0 August 2011
Equipment selection Section 2.2	New feature	Infrastructure 5.0 August 2011
"User Name" drop-down menu Section 2.2	GUI changes (Settings and Logout in drop-down menu), New feature (CPEs Import)	Infrastructure 5.0 August 2011
Switching to Map View for a selected CPE Section 2.7.3.3.2	Improved functionality	Infrastructure 5.0 August 2011
CPEs Import Section 2.4	New feature	Infrastructure 5.0 August 2011

Changed Item	Description	Date
Managing the KPIs tab Contents	Removed (standard table functionality)	Infrastructure 5.0 August 2011
Configuration History Section 2.7.3.2.4	New feature	Infrastructure 5.0 August 2011
CPE Searches/List Types Table 2-3, Table 2-6,	New Searches/List Types: CPEs without Lat/Long, CPEs without Address	Infrastructure 5.0 August 2011
Pre-Defined Searches Lists Section 2.7.3.4	Added definition for Creation Date (CPEs Registered Since search list)	Infrastructure 5.0 August 2011
Edit location Section 2.7.3.5	New feature	Infrastructure 5.0 August 2011
Configuration Utility	Removed Apply button from screens. Added Test Connection to Database Connection screens	Infrastructure 5.0 December 2011

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About StarSuite Portal

Alvarion's Star management suite is a comprehensive, robust, carrier-grade network management solution for enabling rapid network deployment and seamless, cost-effective operation of WiMAX services. The Star Suite includes:

- AlvariSTAR: A comprehensive, a carrier-class, field-proven Network Management System (NMS) for managing Alvarion's WiMAX base stations.
- StarACS: a scalable solution for unified management of any TR-069-enabled WiMAX CPE and end user device.
- StarQuality: Performance and traffic monitoring system that helps operators optimize WiMAX network usage, maximize traffic capacity, maintain high level quality services and comply with service level agreements for ensuring customer satisfaction and loyalty.
- StarReport: A Powerful business objects-based tool providing predefined and ad hoc network reports for improved decision support.

The StarSuite Portal provides the user with a single-point web access to all Alvarion's Star Suite components. This is accompanied by:

- Integration of data received from the various Alvarion management systems in a comprehensive manner.
- Attractive graphic / tabular display of network level information, including projection of information over dynamic geographic maps.
- Means of accessing relevant management entities, in order to define and execute network / device related operations.

The current version supports management information related to 4Motion and Extreme devices. The available functionality and content depend on managed device family and availability of relevant management applications. The supported Star Suite components are:

- AlvariSTAR version 4.8.3 (with a Device Driver for the managed system)
- StarQuality version 3.1
- StarACS version 3.1
- StarReport for 4Motion (not applicable for Extreme)

About this Manual

This manual describes the StarSuite Portal, a single-point web access to all Alvarion's Star Suite components. The manual describes the full functionality of the StarSuite Portal. It is assumed that the user is familiar with the operation and functionality of the relevant Star Suite components and the managed WiMAX system.

This manual includes:

Contents

Tables

Figures

Chapter 1 - Before You Start

In This Chapter:

1.1 Introduction

To verify proper operation of the StarSuite Portal application follow carefully the following steps:

1. Verify that all prerequisites are met (see "Prerequisites" on page 3).
2. Access the Portal Configuration utility, configure all necessary parameters and reset AlvariSTAR to apply the new configuration (see "Configuring the StarSuite Portal" on page 4).
3. Create a user for the StarSuite Portal and verify proper operation (see"Creating a StarSuite Portal User and Verifying Proper Configuration" on page 15).

1.2 Prerequisites

Verify that your system meets the following requirements:

Table 1-1: Prerequisites

Subject	Requirement's Details
Browser	The following browsers were tested with the StarSuite Portal: ■ Microsoft Internet Explorer 8 ■ Mozilla Firefox 3.6 or higher
Java	Java (available from http://www.java.com) must be installed to enable cut-through to AlvariSTAR (AlvariSTAR client uses Java Web Start technology)
Flash	Adobe Flash Player 10 or higher (available from http://www.adobe.com)
Browser Security	In Internet Explorer 8, go to Tools->Internet Options, select the Security tab, and in Trusted sites set the Security level to Medium-low and add to the trusted sites the following addresses: a. http://<AlvariSTAR_Server_IP> b. http://ecn.dev.virtualearth.net (for maps functionality)
Internet Connection	To use functionality related to geographical maps the browser must be connected to the Internet.
Screen Resolution	The minimum recommended screen resolution for a 4:3 format desktop or laptop is 1024x768. For a wide screen, the minimum recommended screen resolution is 1280x800 (laptop) or 1366x768 (HD Ready TV).

1.3 Configuring the StarSuite Portal

Configuration steps include:

- Preparing Required Configuration Details
- The Portal Configuration Utility
- Configuring the StarQuality Application Parameters
- Configuring the StarACS Application Parameters
- Configuring the CSR Application Parameters
- Configuring the StarReport Application Parameters
- Configuring the Database Connections Parameters
- Configuring Miscellaneous Settings (optional)
- Completing the Portal Configuration

1.3.1 Preparing Required Configuration Details

Before you start, verify that you have all necessary configuration details, according to the available Alvarion's Star Suite applications:

Table 1-2: Required Configuration Details

Application	Required Configuration Details
StarQuality	Application: ■ IP Address ■ HTTP Port ■ Username ■ Password Database: ■ Host Address ■ Port ■ Database Name (Oracle SID) ■ Username ■ Password

Table 1-2: Required Configuration Details

Application	Required Configuration Details
StarACS	Application: ■ IP Address ■ HTTP Port ■ JNP Port Database: ■ Database Type (MySQL or Oracle) ■ Host Address ■ Port ■ Database Name ■ Username ■ Password
CSR	■ IP Address (same as IP Address of StarACS) ■ HTTP Port (same as HTTP Port of StarACS) ■ Username ■ Password
StarReport (not applicable for Extreme)	■ IP Address of StarReport's InfoView ■ HTTP Port of StarReport's InfoView ■ Username ■ Password

1.3.2 The Portal Configuration Utility

To connect to the Portal Configuration utility:

1 To configure the Portal, connect to: http://<AlvariSTAR_Server_IP_Address>:<AlvariSTAR Port*>/portal/config

* The default AlvariSTAR port is 8080.

The Sign In window opens.

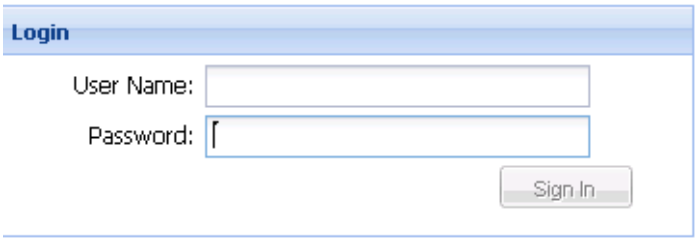


Figure 1-1: Portal Configuration-Sign In Window

2 Enter the User Name and Password and click on the Sign In button. The relevant user must have Administrator privileges in AlvariSTAR.

The Portal Configuration window opens.

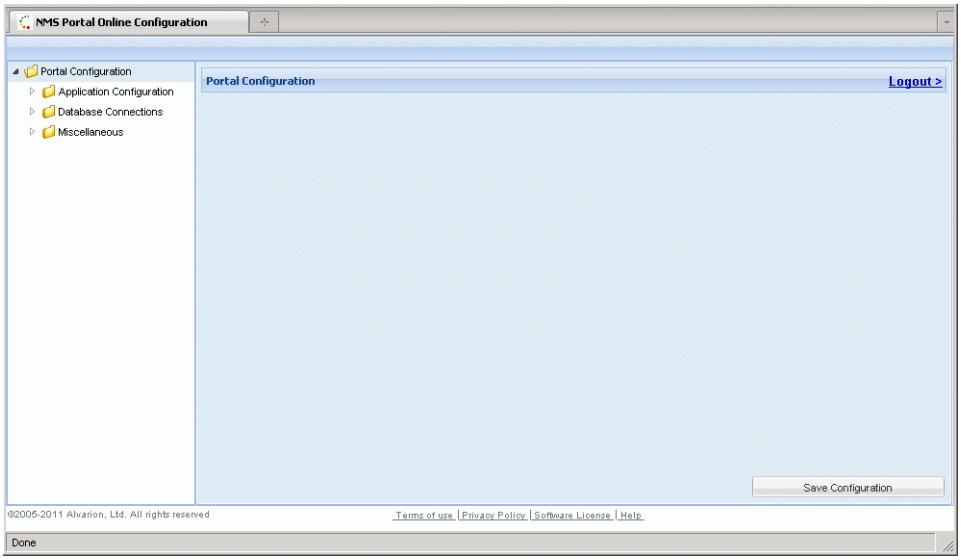


Figure 1-2: Portal Configuration-Main Window

Each configuration screen includes the following buttons:

Table 1-3: Portal Configuration Buttons

Button	Functionality
Undo Changes	Click to cancel configuration changes made in the screen during the current session
Save Configuration	Click to save the entire configuration

CAUTION

The Application Configuration>AlvariSTAR screen is informational. Do not perform any changes in this screens.

Execute the configuration steps described in the following sections.

1.3.3 Configuring the StarQuality Application Parameters

CAUTION

For properly supporting operation with the Portal, the StarQuality must have a license for support of SOAP (Simple Object Access Protocol).

All sites discovered and managed by AlvariSTAR should also be monitored by StarQuality.

To configure the StarQuality application parameters:

1 Select Application Configuration>StarQuality:

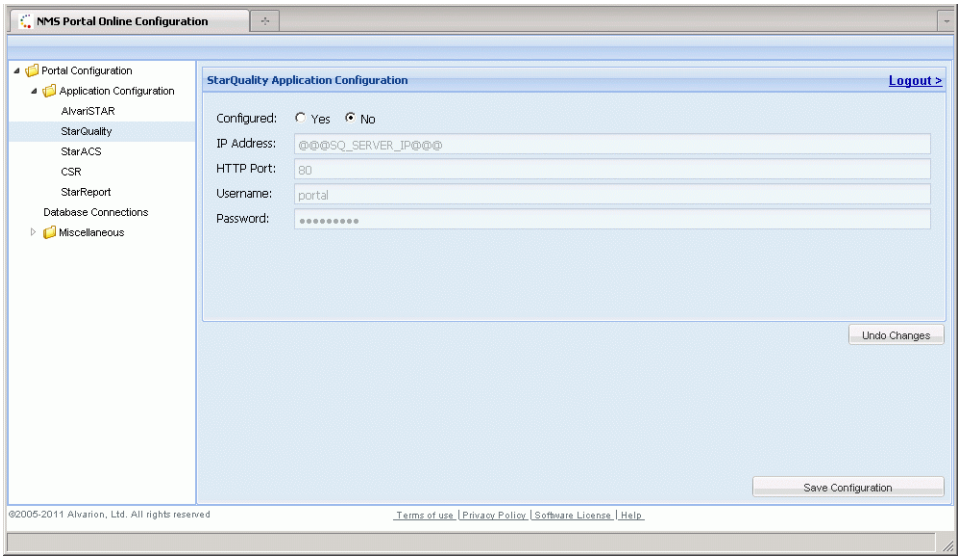


Figure 1-3: Portal Configuration-Application Configuration-StarQuality

2 Set Configured to Yes.

3 In the IP Address field, enter the StarQuality's IP Address

4 In the HTTP Port field, enter the StarQuality's HTTP port number (the default is 80).

5 In the Username field, enter the Username to be used for login to the StarQuality (the default is portal, with Read-Only privileges).

6 In the Password field, enter the Password to be used with the specified Username for login to the StarQuality (the default is portal123).

NOTE!

If StarQuality's Configured state is set to Yes, Database Connection for StarQuality (see Section 1.3.7.2) must be configured.

1.3.4 Configuring the StarACS Application Parameters

To configure the StarACS application parameters:

1 Select Application Configuration>StarACS:

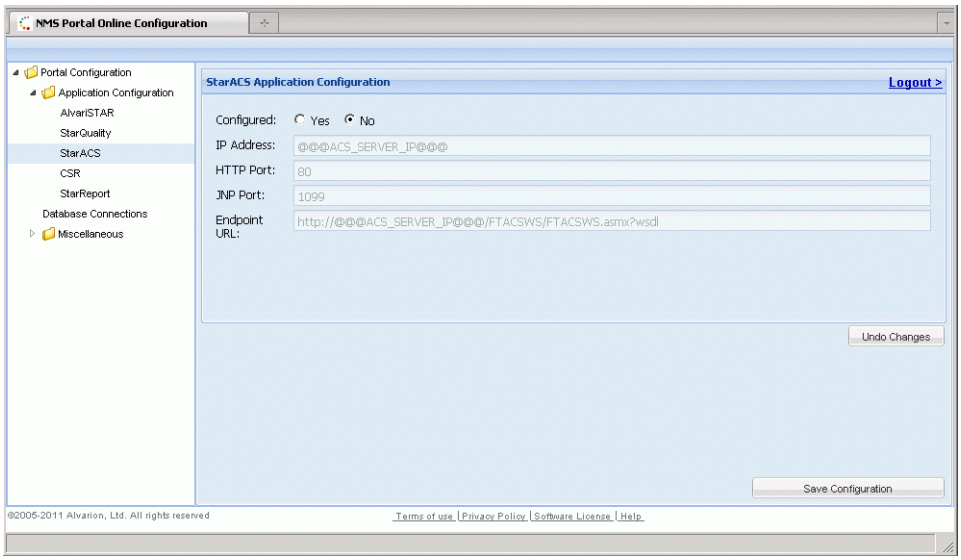


Figure 1-4: Portal Configuration-Application Configuration-StarACS

2 Set Configured to Yes.

3 In the IP field, enter the StarACS's IP Address.

4 In the HTTP Port field, enter the StarACS's HTTP port number (the default is 80).

5 In the JNP Port field, enter the StarACS's JNP port number (the default is 1099).

6 In the Endpoint URL field, change the string @@@ACS_SERVER_IP@@@ to the StarACS's IP Address.

NOTE!

If StarACS's Configured state is set to Yes, Database Connection for StarACS (see Section 1.3.7.3) must be configured.

1.3.5 Configuring the CSR Application Parameters

To configure the CSR application parameters:

1. CSR application should be installed on the ACS server
2. Select Application Configuration>CSR:

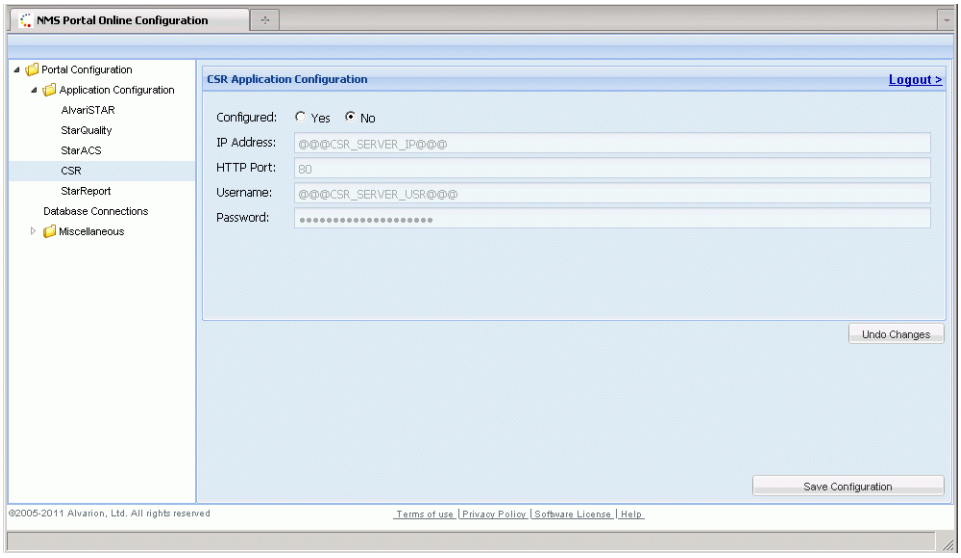


Figure 1-5: Portal Configuration-Application Configuration-CSR

3. Set Configured to Yes.
4. In the IP Address field, enter the StarACS's IP Address
5. In the HTTP Port field, enter the StarACS's HTTP port number (the default is 80).
6. In the Username field, enter the Username to be used for login to the CSR application (the default is admin).
7. In the Password field, enter the Password to be used with the specified Username for login to the CSR application (the default is admin).

1.3.6 Configuring the StarReport Application Parameters

To configure the StarReport application parameters:

1. Select Application Configuration>StarReport:

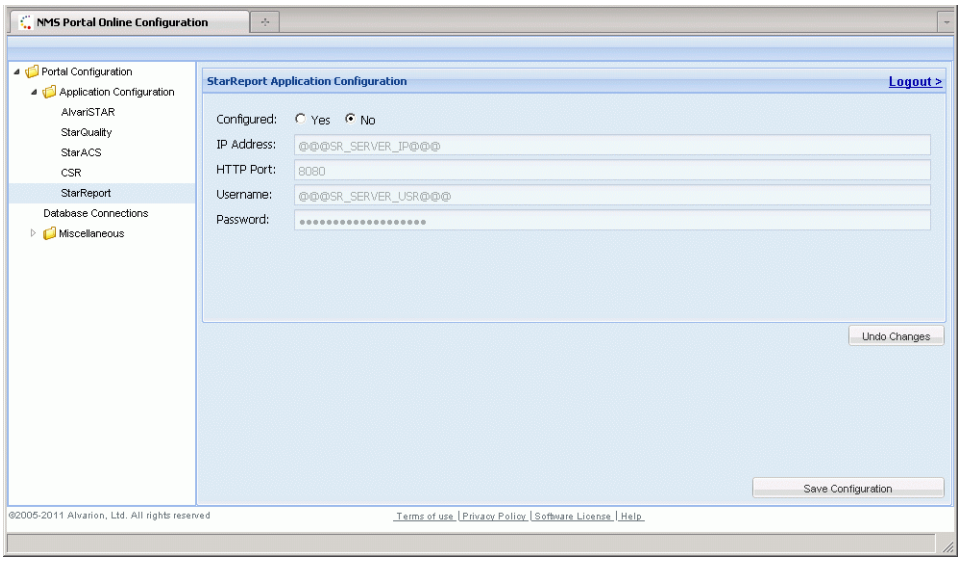


Figure 1-6: Portal Configuration-Application Configuration-StarReport

2 Set Configured to Yes.

3 In the IP Address field, enter the StarReport's IP Address

4 In the HTTP Port field, enter the StarReport's HTTP port number (the default is 8080).

5 In the Username field, enter the Username to be used for login to the StarReport (the default is Administrator).

6 In the Password field, enter the Password to be used with the specified Username for login to the StarReport (the default is report).

1.3.7 Configuring the Database Connections Parameters

This section includes:

- Opening the Database Connections General View
- Configuring Database Connection Parameters for StarQuality
- Configuring Database Connection Parameters for StarACS

1.3.7.1 Opening the Database Connections General View

To configure the Database Connections parameter:

Select Database Connections:

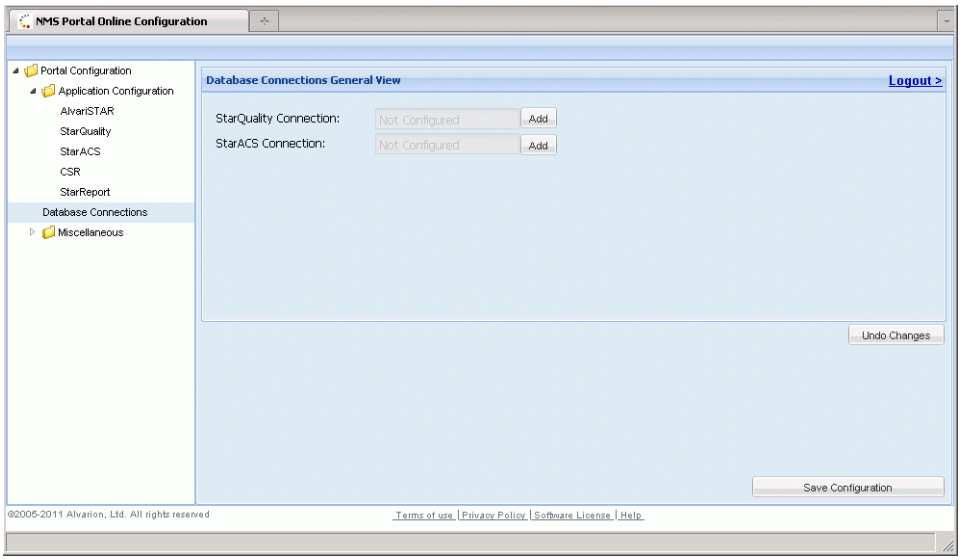


Figure 1-7: Portal Configuration-Database Connections-General View

By default, both database connections are Not Configured.

1.3.7.2 Configuring Database Connection Parameters for StarQuality

To configure the Database Connections parameter for StarQuality:

1 In the Database Connection General View, select Add for StarQuality Connection.

NOTE!

Add operation for StarQuality Connection is available only If in StarQuality Application Configuration the Configured state is set to Yes.

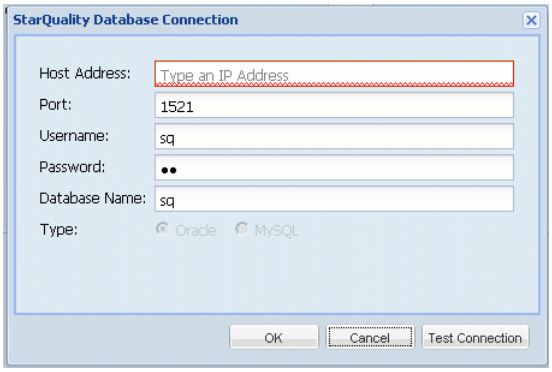


Figure 1-8: Portal Configuration-Database Connections-Add StarQuality Database Connection

2 In the Host Address field, enter the IP address of the database.

3 In the Port field, enter the HTTP port number (the default is 1521).

4 In the Username field, enter the Username to be used for login to the database (the default is sq).

5 In the Password field, enter the Password to be used with the specified Username for login to the database (the default is sq).

6 In the Database Name field, enter the configured name of the database (the default is sq).

7 Click on the Test Connection button to check the connection to the database. If there is an error message, try to correct parameters or check the route to the database.

8 Click on the OK button to apply the configuration and return to the General View screen. The status for the Connection is changed to Configured.

* StarQuality's Database Type is always Oracle.

1.3.7.3 Configuring Database Connection Parameters for StarACS

To configure the Database Connections parameter for StarACS:

1 In the Database Connection General View, select Add for StarACS Connection.

NOTE!

Add operation for StarACS Connection is available only If in StarACS Application Configuration the Configured state is set to Yes.

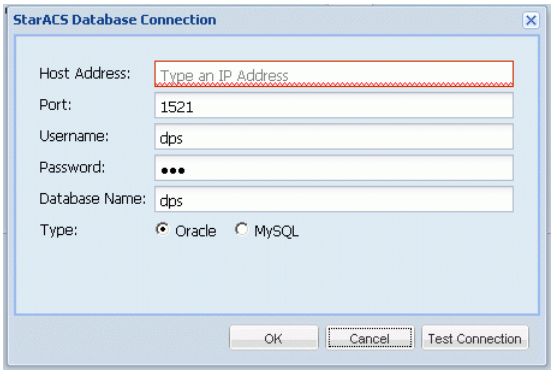


Figure 1-9: Portal Configuration-Database Connections-Add StarACS Database Connection

2 Select the database Type (Oracle or MySQL).

3 In the Host Address field, enter the IP address of the database.

4 In the Port field, enter the HTTP port number (the default is 1521 for Oracle, 3306 for MySQL).

5 In the Username field, enter the Username to be used for login to the database (the default is dps).

6 In the Password field, enter the Password to be used with the specified Username for login to the database (the default is dps).

7 In the Database Name field, enter the configured name of the database (the default is dps).

8 Click on the Test Connection button to check the connection to the database. If there is an error message, try to correct parameters or check the route to the database.

9 Click on the OK button to apply the configuration and return to the General View screen. The status for the Connection is changed to Configured.

1.3.8 Configuring Miscellaneous Settings

In List view, each page includes up to a certain number of entries.

To change the default maximum number of displayed search results on page:

1 Select Miscellaneous>Settings:

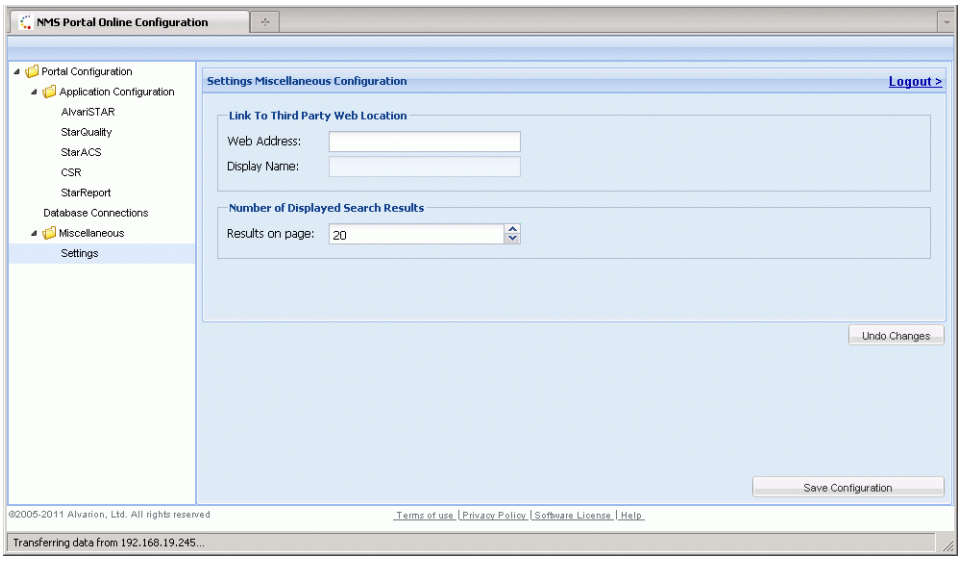


Figure 1-10: Portal Configuration-Miscellaneous-Settings

2 Use the Up/Down keys to change the Number of Displayed Search Results. The range is from 1 to 100. The default is 20.

You can define a link to a third party web location. If defined, a cut-through button to the specified Web Address will be added to the Portal's screen, with a name as defined in the Display Name parameter (refer also to "Using the Cut-through Buttons" on page 21).

To configure a link to a third party web location:

1. Enter the desired Web Address. The range is up to 256 characters. The default is null.
2. Enter the Display Name for the link. The range is up to 12 characters. The default is null.

1.3.9 Completing the Portal Configuration

To complete the Portal Configuration:

1. Click on the Save Configuration button.
2. Logout from the Portal Configuration utility (Logout> link is located on the top right corner of the screen.
3. Restart the AlvariSTAR server to apply the saved configuration.

1.4 Creating a StarSuite Portal User and Verifying Proper Configuration

To create a StarSuite Portal user with geographical maps functionality:

1. Login to AlvariSTAR as a user with Administrators privileges
2. Create a new user. The User Profile Membership must include:
   a. PortalMapUsers (By default, a maximum of two named users can use the PortalMapUsers User Profile. An appropriate license for N additional users (NMS Web Portal Map Users license) is required for supporting more than two users).
   b. A User Profile with at least View permission for Equipment Manager. Supported functionality of cut-through to AlvariSTAR will be according to functional permissions of this User Profile.

NOTE!

For more details on functional permissions related to the StarSuite Portal application, including creation of users without maps functionality, refer to "AlvariSTAR Functional Permissions for StarSuite Portal" on page 16.

3. Exit AlvariSTAR.
4. Login to AlvariSTAR as the new StarSuite Portal user. You will be prompted to change the password after first login.
5. Connect to http://<AlvariSTAR server IP Address>:<AlvariSTAR Port*>/portal (* the default AlvariSTAR port is 8080). The StarSuite Portal should open.
6. The top section of the StarSuite Portal window includes cut-through buttons for Star Suite applications. Verify that all relevant applications are connected (green rectangle indication on the right side of the button).
7. If necessary, you can click on the Settings link (in the top right corner of the StarSuite Portal window) to open the Portal Configuration utility for viewing or modifying configuration parameters.

1.5 AlvariSTAR Functional Permissions for StarSuite Portal

The StarSuite Portal application is automatically installed on the same station as the AlvariSTAR server, using the same security assignment mechanism for functional permissions.

All users using Administrators User Profile have by default functional permission for Web Portal, with View operation only. They may use the StarSuite Portal application, but geographical maps will not be available to them (unless the user is defined also as a member of the PortalMapUsers User Profile as described below).

New User Profiles with similar security assignment related to Web Portal (only View operation) may also be created. Users using these User Profiles may use the StarSuite Portal, without the benefit of geographical maps. The functional permissions of these users must include also View operation for Equipment Manager.

Managers and Observers do not have any functional permission for Web Portal.

Geographical maps are available only for users using the default PortalMapUsers User Profile having functional permission for Web Portal, with both View and ViewMap operations. This User Profile cannot be modified, and it cannot support any other functional permissions. By default, a maximum of two named users can use the PortalMapUsers User Profile. An appropriate license for N additional users (NMS Web Portal Map Users license) is required for supporting more than two users.

To have full functionality of the StarSuite Portal including geographical maps, you must be defined as a member of the PortalMapUsers User Profile. You must be a member of an additional User Profile, having at least functional permission for View operation for Equipment Manager.

Table 1-4: Summary of Functionality per User Profile Membership

User Profile Membership	Support StarSuite Portal Functionality
Administrators only	Partial (without maps)
Managers only	None
Observers only	None
Other (with Web Portal View permission)	Partial (without maps)
PortalMapUsers only	None
PortalMapUsers plus another User Profile	Full (including maps), provided the other User Profile includes permission for at least View operation for Equipment Manager

Chapter 2 - Using the StarSuite Portal

In This Chapter:

2.1 Accessing the Portal

To access the Portal:

Connect to http://<AlvariSTAR server IP Address>:<AlvariSTAR Port*>/portal

* The default AlvariSTAR port is 8080.

You can also use an HTTPS connection via port 8443 for increased security:

https://<AlvariSTAR server IP Address>:8443/portal

The system is supplied with a self signed certificate providing authentication and encrypted connection between client and server. If a certificate signed by a recognized certificate authority is not used, most browsers will display a warning message.

NOTE!

Use one of the browsers specified in Section 1.2.

The Sign In window opens:

Figure 2-1: Portal Sign In Window

Enter the User Name and Password and click on the Sign In button.

NOTE!

For full functionality including availability of geographical maps you must be connected to the Internet and have the appropriate functional permissions. For more details refer to Section 1.5.

2.2 The Portal Screen

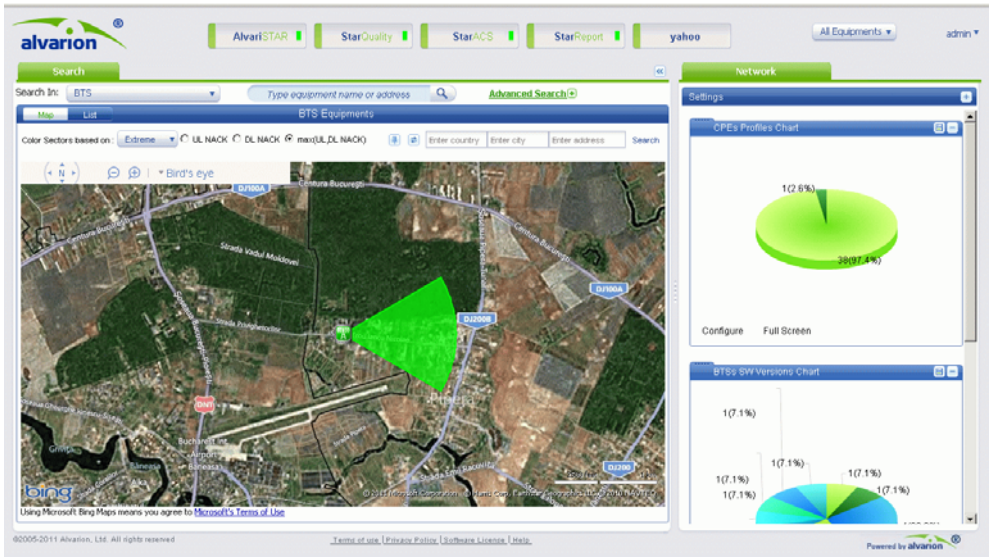


Figure 2-2: The Portal Screen (Map View)

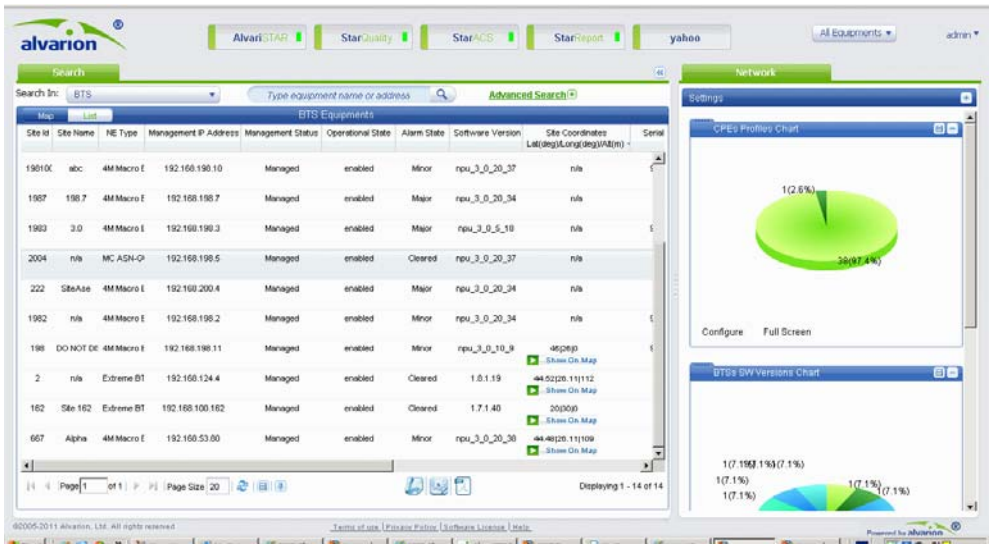


Figure 2-3: The Portal Screen (List View)

The Portal screen includes the following components:

- Top section that includes the following:
  - » Cut-through buttons to Alvarion Star Suite applications, including status indications of each application's server. Optionally it may include also a cut-through button to a third party web

address (if defined in Portal Configuration utility-see "Configuring Miscellaneous Settings" on page 13).

- Equipment selection combo box. Click to open a drop-down list with the following options:
  - **All Equipments** (the default): The Portal will displays search results, pre-defined search options, equipment and sector coloring options on maps and graphs for all equipment types supported by the application.
  - **4Motion**: The Portal will displays search results, pre-defined search options, equipment and sector coloring options on maps and graphs only for **4Motion** devices.
  - **Extreme**: The Portal will displays search results, pre-defined search options, equipment and sector coloring options on maps and graphs only for **Extreme** devices.
- "Login User Name" display indicating the name of the user, with a drop-down list offering the following options:
  - **CPEs Import** cut-through link: Click to open the CPEs Import utility (see "Importing CPE Files" on page 22). Applicable only for users with administrator privileges.
  - **Settings** cut-through link: Click to open a new browser window/tab and connect to the Portal Configuration utility. Applicable only for users with administrator privileges.
- **Logout** action link: Click to logout

- Search section that includes the following:
  - Entities search functionality (see "Entities Search" on page 27).
  - Information display area: A geographic map with overlay data or a list of entities (see "Map/List Views" on page 35).
- Network section that includes a customizable set of graphs, charts and reports (see "Managing Graphs, Charts and Reports" on page 61).

2.3 Using the Cut-through Buttons

The top section of the portal contains cut-through buttons to other applications:

- AlvariSTAR
- StarQuality
- StarACS
- StarReport
- Display Name for a third party web address (if defined)

The actual repertoire of active cut-through buttons is set per installation according to the actually available components linked to the portal:

- If the application server is not configured in the Configuration Utility (see Section 1.3), the system shall display the corresponding cut-through button as non-active (greyed out).
- If the application server is configured in the Configuration Utility (see Section 1.3) but the application is not running, the system shall display the corresponding cut-through button as active, with a small red rectangle on the right side of the button.
- If the application server is configured in the Configuration Utility (see Section 1.3) and the application is running, the system shall display the corresponding cut-through button as active, with a small green rectangle on the right side of the button.

Position the mouse on an active button to view a tool-tip with more details on the application server's status.

Click on an active cut-through button of a running application (with a green rectangle on the right side) to open the default entry screen of the relevant management application in a new window. Refer to Section 2.7.3.2.3 and Section 2.7.3.3.3 for details on more cut-through options.

A cut-through button to a third party web address will be available on the right side of the StarReport button if defined in the Portal Configuration utility (see "Configuring Miscellaneous Settings" on page 13). If available, this button is always active. Click on the button to open the specified web link in a separate tab (or window) of the browser).

2.4 Using the CPEs Import Utility

The CPEs Import utility enables loading to the system files with CPE(s) location details. These location details may be used to display the a CPE in its geolocation, and are included in the displayed CPE Information for CPE(s) shown on the map.

CPE location details may specify either its geolocation (latitude/longitude) or its full address.

The system accepts files with CPE(s) location details that meet the following rules:

1. The file is a text file, parameters are comma separated.
2. Each line describes one CPE, and can have a variable length.
3. A line always starts with a CPE Serial Number. The Serial Number must be a valid one (exists in the ACS database).
4. The second parameter in each line is either "ADDR" or "LATLONG" (case-insensitive), defining the type of location information to be provided by the following parameters.
5. If the second parameter is "LATLONG", the rest of the line should contain two floating point numbers or degrees:minutes:seconds, defining latitude and longitude. If no latitude and longitude details follow "LATLONG", the system will assume the user wanted to delete the latitude and longitude information in the system (if exist) for the specific CPE.
6. If the second parameter is "ADDR", the line should contain the following parameters:
   a. Country
   b. State (required only if the country is US)
   c. City
   d. Rest of the address

   If no address details follow "ADDR", the system will assume the user wanted to delete the address information in the system (if exist) for the specific CPE.

   The utility offers the option of using Bing Spatial Data Services to try resolving the latitude/longitude coordinates of "ADDR" CPEs (see "Using Bing Spatial Data Services" on page 24).

2.4.1 Importing CPE Files

To load CPE file(s):

1. In the <User> drop-down list, select CPEs Import. The CPEs Import window opens:

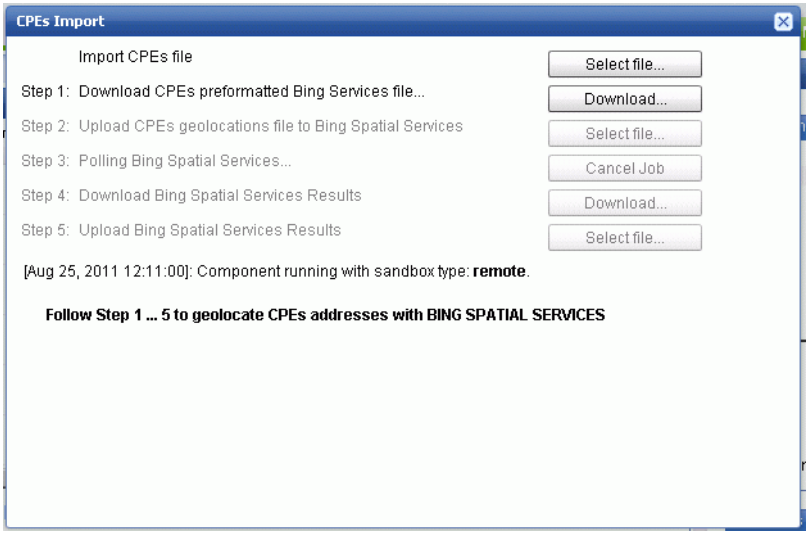


Figure 2-4: The CPEs Import Window

NOTE!

You may skip the Import CPEs file process (steps 2 to 3 below) and start a Bing Spatial Data Services job (see "Using Bing Spatial Data Services" on page 24) for geolocating previously loaded "ADDR" CPEs that are stored in the management system server without latitude/longitude details.

2 Click on **Select file...**. The **Select file(s) to upload by <AlvariSTAR IP Address>** dialog box opens. Select CPE file(s) and click **Open**.

3 Click on **Upload file** to upload the selected files to the AlvariSTAR server.

- Lines will be validated.
- If applicable, lines with invalid parameters will be indicated.
- Details of validated lines will be uploaded to the management system.
- The number of CPEs without latitude/longitude on the management system server will also be displayed (if there are such CPEs). This includes new uploaded "ADDR" CPE(s) and previously uploaded "ADDR" CPEs that were not geolocated.

If the file is not in a textual format, or if there is any other general problem with the input file, the system will inform the user via an error message and abort the operation.

If there are no CPEs without latitude/longitude on the management system server, the CPEs Import operation is completed and the window should be closed.

If there are CPEs without latitude/longitude on the management system, the user may still decide to discontinue the operation and close the window. The geolocation for these CPEs may be resolved later using Bing Maps Geolocation Services. Otherwise, the user may continue, trying to geolocate the CPE(s) using Bing Spatial Data Services.

2.4.2 Using Bing Spatial Data Services

NOTE!

Bing Spatial Data Services is intended for resolving the geolocation for a large number of "ADDR" CPEs. If there are few CPE with address details that are not geolocated it is recommended to resolve their geolocation using the Bing Maps Geolocation Services (see "Switching to Map View for a selected CPE" on page 45 and "Editing CPE Location Details" on page 49).

Bing Spatial Data Services may not be available due to one of the following reasons:

- Another user of the Portal is running a Bing Spatial Data Services job. There can be only one running job at a time per Portal server.
- The maximum number of jobs has been reached. The maximum number of jobs is limited to 50 jobs per 24 hours per a Bing Maps Key (account). The Portal server has a single Bing Maps Key.

To run a Bing Spatial Data Services job:

1. Start Step 1 by clicking on **Download...**. The **Select location for download by <AlvariSTAR IP Address>** dialog box opens allowing you to specify a location and name. Click **Save** to save on the drive a file containing addresses of all previously imported CPEs (by all users / sessions) that don't have a geolocation (Latitude/Longitude).
2. Start Step 2 by clicking on **Select file...**. The **Select file(s) to upload by <AlvariSTAR IP Address>** dialog box opens. Select the previously saved file (file type is cpe.xml) and click **Open**.
3. Click **Upload** to upload the selected file to Bing Spatial Data Services and start Step 3 of the process. A Bing job trying to geolocate the CPEs in the uploaded file will start. As long as the job is not completed (pending), you may abort it by clicking on **Cancel Job**.

NOTE!

As long as the job is pending, another Bing Spatial Data Services job cannot take place.
To properly cancel a job you must click on **Cancel Job**. If you just close the window before the job is completed and the results are uploaded to the management system server, the job is considered as open and another job cannot be started.

4. After completion of the job, start Step 4 by clicking on **Download...**. The **Select location for download by <AlvariSTAR IP Address>** dialog box opens allowing you to specify a location and name. Click **Save** to save on the drive an xml file containing job results.
5. Start Step 5 by clicking on **Select file...**. The **Select file(s) to upload by <AlvariSTAR IP Address>** dialog box opens. Select the previously saved file (file type is job_results.xml) and click **Open**.
6. Click on **Upload File** to complete the process by uploading the job results file to the management system server. You will be informed of the results (number of geolocated addresses, number of updated addresses and number of addresses that were not geolocated and are without latitude/longitude).

NOTE!

If the geolocation service returned zero results or more than one result, only the address information will be stored on the management system. You may try later to resolve the geolocation of such CPEs using the Bing Maps Geolocation Services (see"Switching to Map View for a selected CPE" on page 45 and "Editing CPE Location Details" on page 49).

2.5 Re-sizing the Search and Network sections

By default, both the Search and Network sections are displayed. When hovering the mouse over the separation bar between the two sections, the mouse pointer becomes a double-headed arrow ( ) You can change the relative sizes of the sections by dragging this arrow left/right.

You can hide the Search section to increase the size of the Network section so it will occupy the entire width of the screen by clicking on the Hide Search Section button ( ) located on the top right corner of the Search section. To return to the previous state, click on the Show Search Section button ( ) located on the left side of the expanded Network section.

2.6 Entities Search

This section includes:

2.6.1 Introduction to Entities Search Functionality

The entities search functionality enables the user to focus on entities that meet certain criteria. Search results reflect data retrieved from relevant management components (if available):

- AlvariSTAR: Current information in the configuration database
- StarQuality: Information for the relevant equipment recorded during the relevant period.
- StarACS: Current information in the database.

Figure 2-5: The Search Bar (Advanced Search Hidden)

Search functionality is entity-type sensitive. Use the **Search In** drop-down menu to select between BTS and CPE search. The default selection is BTS.

Search results are displayed in List view.

2.6.2 Simple Search

The simple search functionality enables searching for BTS(s) based on either BTS Name or Management IP Address, or searching for CPE(s) based on the MAC Address.

In a CPE search, specify in the **Enter equipment name or address** text box a complete MAC address to search for a specific CPE, or a partial address string to search for CPEs that the specified string is included anywhere in their MAC address (for example-type E7-30 to search for all CPEs whose MAC address includes the string E7-30). Leave the text box empty to search for all CPEs in the database.

In a BTS search, the search can be based on either BTS Site Name or BTS Management IP Address:

- In a Site Name based search, specify in the **Enter equipment name or address** text box a complete Site Name to search for a specific BTS, or a partial string to search for BTSs that the specified string is included anywhere in their Site Name (for example-type ab to search for all BTSs whose Site Name includes the string ab).
- In a Management IP Address based search, specify in the **Enter equipment name or address** text box a complete Management IP Address to search for a specific BTS, or a partial string to search for

BTSs that the specified string is included anywhere in their Management IP Address (for example-type 130.131 to search for all BTSs whose Management IP Address includes the string 130.131).

- Leave the text box empty to search for all BTSs in the database.

Enter the search string in the **Enter equipment name or address** text box and click on the button to initiate the search. For either BTS or CPE, do not type anything (or enter only the wild card character *) to search for all BTSs or CPEs in the relevant database.

The search string is not case-sensitive.

2.6.3 Advanced Search

This section includes:

2.6.3.1 Introduction to Advanced Search Functionality

To open the advanced search definition section, click on the Advanced Search link.

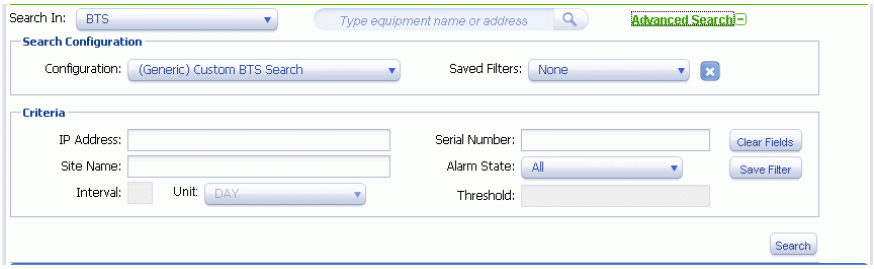


Figure 2-6: Advanced BTS Search

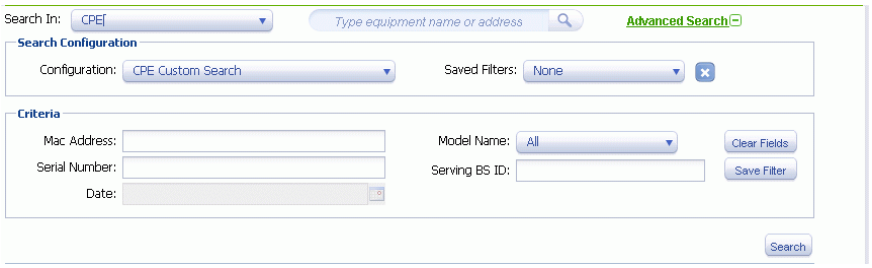


Figure 2-7: Advanced CPE Search

The advanced search enables defining any of the following:

- A custom search, allowing definition of various search criteria.
- A pre-defined search from a factory-set list.
- A previously saved custom search.

2.6.3.2 Performing a Custom Search

To define/run a custom search:

1. Select BTS (the default) or CPE in the **Search In** drop-down menu.
2. Select Custom BTS Search/Custom CPE Search (the default) in the **Configuration** drop-down menu.
3. Select the required search criteria. You can select one or several of the following criteria:
   - » For a Custom BTS Search:
     - ◊ IP Address
     - ◊ Site Name (with support for wildcard search functionality)
     - ◊ Serial Number
     - ◊ Alarm State (select from the drop-down menu):
       - Cleared
       - Indeterminate and above
       - Warning and above
       - Minor and above
       - Major and above
       - Critical
       - All (the default)

- For a Custom CPE Search:
  - MAC Address: specify a complete MAC address to search for a specific CPE, or a partial address string to search for CPEs that the specified string is included anywhere in their MAC address (for example-type E7-30 to search for all CPEs whose MAC address includes the string E7-30). Leave the text box empty to search for all CPEs in the database.
  - Serial Number: Specify a complete Serial Number or a partial prefix string (for example-type 7053 to search for all CPEs whose serial number starts with 7053).
  - Model Name (select from the drop-down menu):
    - BMAX 1000
    - BMAX 2000
    - CPE 5000
    - BMAX 4000
    - BMAX 3000
    - BMAX 6000
    - NGVG
    - All (the default)
  - Serving BS ID: Specify a complete BS ID or a partial prefix string (for example-type 130.131.30.14 to search for all CPEs served by any BS whose BS ID starts with 130.131.30.14).

4. The search strings are not case-sensitive.
5. To clear selected parameters, click on the **Clear Fields** button.
6. To run the search based on the defined criteria, click on the **Search** button. The search result will be displayed below. For details refer to "BTS Equipments List" on page 42 or "CPE Equipments List" on page 45.
7. The results for a Custom CPE search include only "connected" CPEs:
   - 4Motion: CPEs available in the database of StarQuality that had at least one collection in the last 24 hours (including CPEs not available in the database of StarACS).
   - Extreme: CPEs available in the database of AlvariSTAR (including CPEs not available in the database of StarACS).
8. To save the search criteria, click on **Save Search**. The Save Search dialog box opens, enabling you to define the Filter Information:

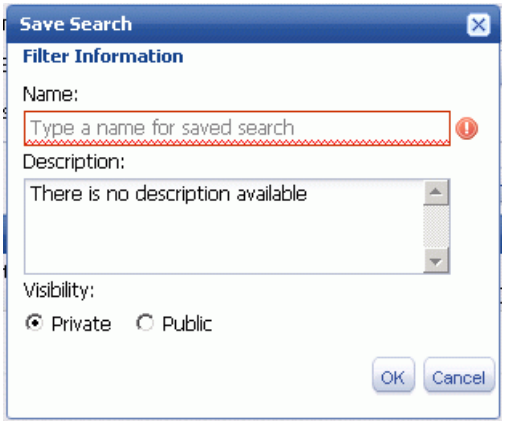


Figure 2-8: Save Search

- Name: A mandatory parameter. The name of the saved custom search for future use (refer to "Performing a Previously Saved Search" on page 31)
- Description: An optional description of the Filter.
- Visibility: Select whether you want the Filter to be available for all users (Public) or only to you (Private). The default is Private.

2.6.3.3 Performing a Previously Saved Search

To run a previously saved search:

1. Select BTS (the default) or CPE in the **Search In** drop-down menu.
2. Select the desired Filter in the **Saved Filter** drop-down menu (The default is No filter). When you place the mouse over any saved search, you will get a tool-tip with the saved search parameters.
3. Click on the **Search** button. The search result will be displayed below in a List view.

2.6.3.4 Deleting a Previously Saved Search

To delete a previously saved search:

1. Select BTS (the default) or CPE in the **Search In** drop-down menu.
2. Select the desired Filter in the **Saved Filters** drop-down menu.
3. Click on the X button. You will be requested to confirm the action.

2.6.3.5 Performing a Pre-Defined Search

To define/run a pre-defined search:

1 Select BTS (the default) or CPE in the **Search In** drop-down menu.

2 Select one of the pre-defined searches in the Configuration drop-down menu:

» For a BTS pre-defined search for 4Motion devices (based on StarQuality reports) the available options are:

Table 2-1: 4Motion BTS Pre-Defined Searches

Name	Description	Equivalent StarQuality Report
Top 20 UL throughput	Top 20 BTSs regarding single-AU uplink throughput, over the last week	4Motion top N average sector throughput UL
Top 20 DL throughput	Top 20 BTSs regarding single-AU downlink throughput, over the last week	4Motion top N average sector throughput DL
Bottom 20 UL throughput	Bottom 20 BTSs regarding single-AU uplink throughput, over the last week	4Motion bottom N average sector throughput UL
Bottom 20 DL throughput	Bottom 20 BTSs regarding single-AU downlink throughput, over the last week	4Motion bottom N average sector throughput DL
Top 20 CPEs no.	Top 20 BTSs regarding the number of currently-connected CPEs	4Motion top no. of SUs
Bottom 20 CPEs no.	Bottom 20 BTSs regarding the number of currently-connected CPEs	4Motion bottom no. of SUs
Top 20 UL utilization	Top 20 BTSs regarding single-AU uplink utilization, over the last week	4Motion top N average sector air-link utilization UL
Top 20 DL utilization	Top 20 BTSs regarding single-AU downlink utilization, over the last week	4Motion top N average sector air-link utilization DL
Bottom 20 UL utilization	Bottom 20 BTSs regarding single-AU uplink utilization, over the last week	4Motion bottom N average sector air-link utilization UL
Bottom 20 DL utilization	Bottom 20 BTSs regarding single-AU downlink utilization, over the last week	4Motion bottom N average sector air-link utilization DL
Bottom 10 Uptime	Bottom 10 BTSs regarding current uptime	4Motion bottom N uptime

» For a BTS pre-defined search for Extreme devices (based on relevant events received by AlvariSTAR) the available options are:

Table 2-2: Extreme BTS Pre-Defined Searches

Name	Description	Applicable Event
Top 10 Airlink Problems	Top 10 BTSs regarding number of MS connection failures (user disconnection) during the last hour or day.	User Airlink Connection Failure (userAirlinkConnectionFailure, extremeEvents 57)
Top 10 Satellite Sync Problems	Top 10 BTSs using a Trimble GPS regarding number of events during the last hour or day indicating that the GPS is synchronized to less than 4 (the minimum required number of satellites) at the time of initialization.	Min 4 Satellite Sync Failure (min4SatelliteSyncFailure, extremeEvents 116)
Top 10 Hold Over Entered	Top 10 BTSs using a GPS regarding number of events during the last hour or day indicating that the BTS entered holdover state.	Hold Over Entered (holdOverEntered, extremeEvents 110). Note that the event is sent by each affected BS.
Top 10 KeepAlive	Top 10 BTSs using an external Authentication server regarding number of events during the last hour or day indicating that the Authentication server is not responding to keep-alive messages.	Authentication Server Keepalive Timeout (authenticationServerKeepaliveTO , extremeEvents 103)

In the Criteria section, use the Unit drop-down menu to select between one HOUR or one DAY. The default is one HOUR.

» For a CPE pre-defined search (based on information gathered from StarACS) the available options are:

Table 2-3: CPE Pre-Defined Search

Name	Description
Searches based on information gathered from StarACS	
CPEs Registered Since	CPEs registered since a certain date (see below instructions for date definition)
CPEs Rebooted Since	CPEs rebooted since a certain date (see below instructions for date definition)
CPEs Not Updated Since	CPEs not updated since a certain date (see below instructions for date definition)
Searches based on information gathered from StarACS plus information received from the Portal server (uploaded using CPEs Import utility)	

Table 2-3: CPE Pre-Defined Search

Name	Description
ACS CPEs without Lat/Long	CPEs with address information and without latitude/longitude information
ACS CPEs without Address	CPEs with latitude/longitude information and without address information

To select a date: In the Date field enter a date in the format YYYY-MM-DD, or click on the button to open the calendar window for date selection.

For ACS CPEs without Lat/Long or ACS CPEs without Address, you can select in the W/O Location drop-down menu wheter to view all CPEs or only "connected" CPEs: "Connected" 4Motion CPEs include all CPEs available in the database of StarQuality that had at least one collection in the last 24 hours (including CPEs not available in the database of StarACS). "Connected" Extreme CPEs include all CPEs available in the database of AlvariSTAR (including CPEs not available in the database of StarACS).

3 To run the pre-defined search, click on the **Search** button. The search result will be displayed below in a List view. The table's content for each of the pre-defined searches is described in "Pre-Defined Searches Lists" on page 46.

2.7 Map/List Views

This section includes:

2.7.1 Switching between Map and List Views

The Map and List buttons enables selecting the information view mode.

The default view is List. Map view is available only for users with full ViewMap privileges (using the PortalMapUsers User Profile).

2.7.2 Managing List Views

This section includes:

2.7.2.1 Introduction to List Views

List view displays a table with contents according to the relevant search and its results. The default list is BTS Equipment (see "BTS Equipments List" on page 42), displaying information for all sites in the database of AlvariSTAR.

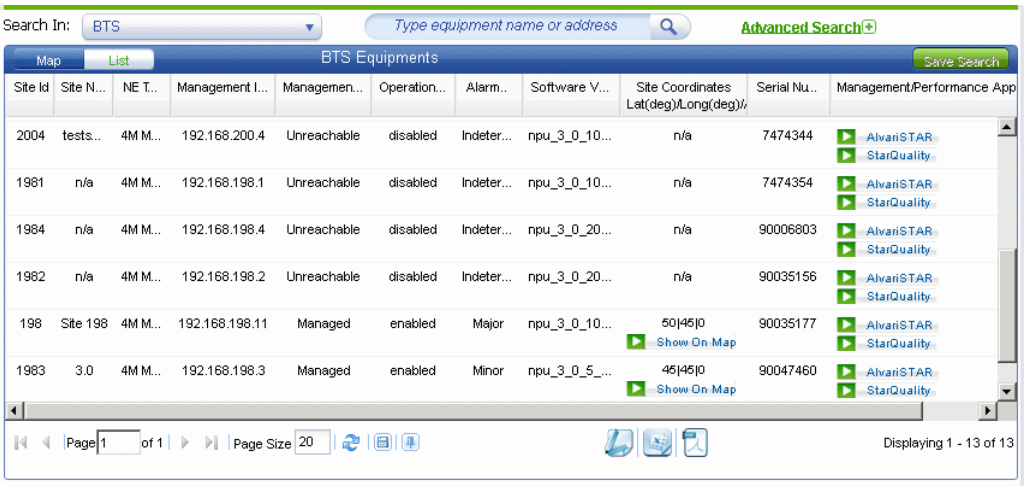


Figure 2-9: List View

2.7.2.2 Page and List Control Bar

The Page and List Control Bar is displayed below the results table. It contains quick access icons and controls for some common operations. It also provides details on the results displayed in current page and total number of results.

Figure 2-10: Page and List Control Bar

2.7.2.2.1 Using the Page Controls

When the number of results exceeds the number defined in the Page Size box, the results are divided into several pages. Use the following controls to browse the various pages and manage page size:

Table 2-4: Page Controls

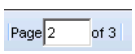
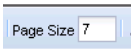
Icon/Control	Description
	**First/Previous** - Cycles back to the first or previous page.
	**Next/Last** - Cycles forward to the next or last page.
	**Page # of** - The current page number out of total number of pages.

Table 2-4: Page Controls

Icon/Control	Description
	**Page Size** - Defines the number of results to display in each page. The default is 20. See also Section 1.3.8 for details on changing the default number of results per page. You have to refresh the list in order for the change of the page size to take effect.

2.7.2.3 Using the List Controls

The List Control buttons are.

Table 2-5: List Controls

Icon	Description
	**Refresh** - Refreshes the displayed information.
	**Save Grid Configuration** - Saves the current columns' order. The saved configuration will be the default for the specific user. Refer to sections Section 2.7.2.4.3 and Section 2.7.2.5 for details on changing displayed columns and their order.
	**Detach List** - opens the list in a new window. Click Esc to return.
	**Export CSV** - Exports the List's content to an Excel Comma Separated Value file. The default file name includes search type, filter, date and user name.
	**Export Excel** - Exports the List's content to an Excel Worksheet file.
	**Export PDF** - Exports the List's content to an Adobe Acrobat PDF document.

2.7.2.4 Modifying the List Content

This section includes:

- Introduction to List Modification Functionality
- Sorting Lists
- Dynamic Columns Selection
- Filtering the Displayed Information

2.7.2.4.1 Introduction to List Modification Functionality

Position the cursor on a table header. A small drop-down arrow will appear on the right side of the header. Left-click on the arrow to open the column modification menu.

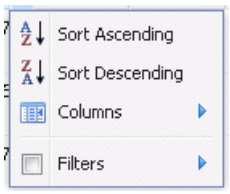


Figure 2-11: Column Modification Menu

The available options in the column modification menu are:

- Sort Ascending (see Section 2.7.2.4.2)
- Sort Descending (see Section 2.7.2.4.2)
- Columns (see Section 2.7.2.4.3)
- Filters (see Section 2.7.2.4.4)

2.7.2.4.2 Sorting Lists

In the column modification menu, select the **Sort Ascending** option to sort the table by the selected column in ascending order. Select the **Sort Descending** option to sort the table by the selected column in descending order.

Alternatively, click on any of the column headings to sort the table by the selected column. Click again on a column heading to toggle between ascending and descending sorting order.

2.7.2.4.3 Dynamic Columns Selection

In the column modification menu, position the cursor on the **Column** option to displays a list of all the columns that are available in the table. Check the columns that you wish to display and uncheck the columns that you want to hide.

2.7.2.4.4 Filtering the Displayed Information

In the column modification menu, position the cursor on the **Filters** option (not available in some columns) to display the filter definition menu. There are different types of filters, according to syntax of the selected header:

- Filter by Option(s): A list of options with a check-box next to each one allowing you to filter the results so that only entities that match any of the selected options will be displayed.

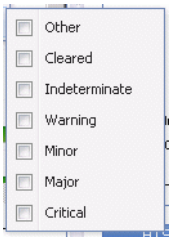


Figure 2-12: Filter by Option(s)

- Text String Filter: A single text box allowing you to filter the results by a specific string in the value in the selected column. A single text field opens, allowing you to enter the filtering string.

Figure 2-13: Text String Filter

The table is updated on the fly (the content is automatically updated after entering each character).

For example, if you want to filter the displayed results for BTS Equipments list by Site Name so that only sites that include the string "ab" in their name will be displayed: After entering "a" in the filter definition text field, only sites that include the character "a" anywhere in the Site Name will be displayed. Enter "b", and only sites that include the string "ab" anywhere in the Site Name will be displayed. Note that the filter string is not case-sensitive.

- Value Range/Specific Value Filter: Three text boxes marked <, > and =, allowing you to define a range of values or a single value so that only entries that match the definition will be displayed.

Figure 2-14: Value Range/Specific Value Filter

The table is updated on the fly (the content is automatically updated after entering each number).

Examples for filtering the displayed results of BTS Equipments list by a range/value of Site ID:

a. Enter 200 in the < text box. Only sites whose site ID is smaller than 200 will be displayed.

b. Enter 200 in the < text box and 100 in the > text box. Only sites whose site ID is between 101 and 199 will be displayed.

c. Enter 200 in the = text box. Only the site with Site ID=200 (if exists in the relevant database) will be displayed.

- Date Range/Specific Date Filter: Three date options allowing you to define a range of dates or a single value so that only entries that match the definition will be displayed.

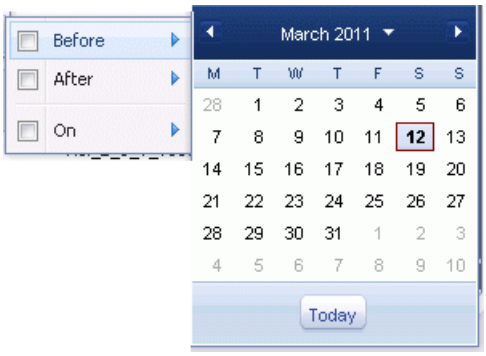


Figure 2-15: Date Range/Specific Date Filter

Examples for filtering the displayed results of CPE Equipments list by a range/value of Last Connection Date:

a Position the mouse on the Before option to open the calendar window. Select a date. Only CPEs whose last connection date is before the specified date will be displayed.

b Position the mouse on the Before option to open the calendar window. Select a date. Position the mouse on the After option to open a new calendar window and select another date (must be after the selected Before date). Only CPEs whose last connection date is between the specified dates will be displayed.

c Position the mouse on the On option to open the calendar window. Select a date. Only CPEs whose last connection date is at the specified date will be displayed.

The header color of a filtered column is changed to red.

To cancel column filtering, uncheck the **Filters** option in the column modification menu.

2.7.2.5 Resizing and Rearranging Columns

To resize a column, position the cursor on the border line between two columns headings. The cursor changes into a double-headed arrow. Click and drag the cursor to the left or to the right to increase or decrease the size of a column.

To rearrange column sequence, click and drag a column header to the new desired position.

2.7.3 List Types

This section includes:

2.7.3.1 Available List Types

The available list types as displayed on the title bar of search results are:

Table 2-6: List Types

Search Type	List Type
Simple and Custom Searches	
Simple BTS Search	BTS Equipments
Simple CPE Search	CPE Equipments
Custom BTS Search	BTS Equipments
Custom CPE Search	CPE Equipments
4Motion BTS Searches	
Top 20 UL throughput Top 20 DL throughput Bottom 20 UL throughput Bottom 20 DL throughput	BTS by Throughput
Top 20 CPEs no. Bottom 20 CPEs no.	BTS by CPE Number
Top 20 UL utilization Top 20 DL utilization Bottom 20 UL utilization Bottom 20 DL utilization	BTS by Air Link Utilization (ALU)
Bottom 10 Uptime	BTS regarding current uptime
Extreme BTS Searches	
Top 10 Airlink Problems	Top 10 BTS with User Airlink Connection Failure
Top 10 Satellite Sync Problem	Top 10 BTS with Minimum 4 Satellite Sync Failure
Top 10 Hold Over Entered	Top 10 BTS Hold Over Entered
Top 10 KeepAlive	Top 10 BTS with Authentication Server Keep Alive TO
CPE Searches	
CPEs Registered Since	CPEs Registered since
CPEs Rebooted Since	CPEs Rebooted since

Table 2-6: List Types

Search Type	List Type
CPEs Not Updated Since	CPEs not Updated since
ACS CPEs without Lat/Long	CPEs without Lat/Long
ACS CPEs without Address	CPEs without Lat/Long

2.7.3.2 BTS Equipments List

This section includes:

- BTS Equipments List Parameters
- Switching to Map View for a selected BTS
- Performing Cut-through to BTS Management Applications

2.7.3.2.1 BTS Equipments List Parameters

The default BTS Equipment list includes the following parameters for each BTS:

- Site ID
- Site Name
- NE Type
- Management IP Address
- Management Status
- Operational State
- Alarm State
- Software Version
- Site Coordinates (Lat(deg)/Long(deg)/alt(m) with a **Show On Map** link for sites with known coordinates. For details refer to Section 2.7.3.2.2 below.
- Serial Number
- Management/Performance Application with cut-through links to relevant management applications. For details refer to Section 2.7.3.2.3 below.
- Configuration History link (applicable only for 4Motion devices) for viewing configuration changes history of the site. For details refer to "Configuration History" on page 43.

2.7.3.2.2 Switching to Map View for a selected BTS

Next to the Site Coordinates details of each site with known coordinates, there is a **Show On Map** link. Click on the link to switch to Map view, with the selected BTS icon in the center of the displayed map.

2.7.3.2.3 Performing Cut-through to BTS Management Applications

The Management/Performance Application column includes cut-through links to AlvariSTAR and StarQuality.

Click on the **AlvariSTAR** cut-through link to open in a separate window the entry AlvariSTAR Device Manager screen (BTS View) for the selected site.

Click on the **StarQuality** cut-through link to open in a separate window the StarQuality in the specific BTS context.

2.7.3.2.4 Configuration History

Click on the Configuration History link to open the Configuration History Request window.

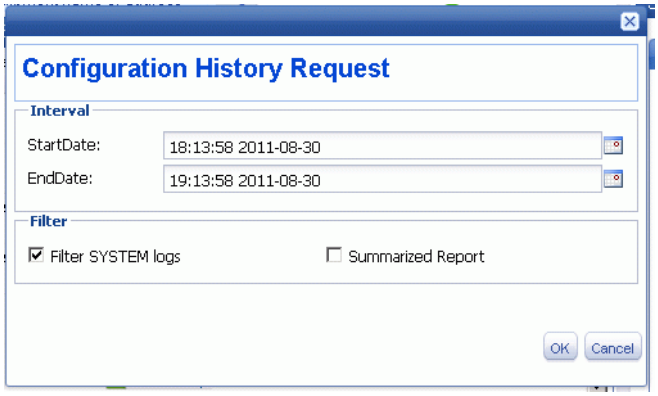


Figure 2-16: The Configuration History Request Window

The Configuration History Request window enables defining the time interval and filtering parameters for a Configuration History Report detailing the relevant changes in the configuration of a selected device.

In the **Interval** section, select **Start Date** and **End Date** for the report.

Select the **Filter SYSTEM Logs** to include in the report only changes made by an AlvariSTAR user using the AlvariSTAR server installed on the same station as the StarSuite Portal server. De-select this option to include also all changes made by the system. These includes changes initiated by the device itself (as a response to various events), changes made via Telnet/SNMP and changes made using other AlvariSTAR servers. The default is selected (checked).

Select **Summarized Report** to show in the report only the changes between the requested Start Date and End Date. For example, if a certain parameter was modified more than once during the specified interval, only a single change entry will be provided, indicating the last relevant change (the value in Changed From will be the value at Start Date). If following any series of changes the status of a certain parameter at End Date is the same as in Start Date, no change will be indicated in the report. De-select the **Summarized Report** option to include in the report all changes history. The default is de-selected (unchecked).

Click on the **OK** button to generate the requested report.

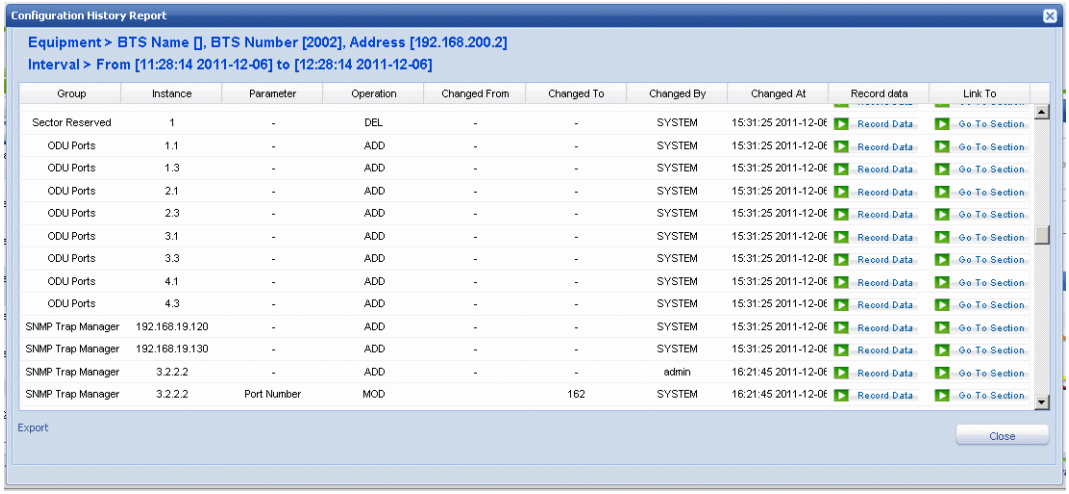


Figure 2-17: The Configuration History Report

The Configuration History Report title includes identification details:

- BTS Name
- BTS Number
- Address (IP address used for management)
- Interval of the report (From-To)

For each change included in the report the following details are provided:

Parameter	Description
Group	The type of entity that was changed.
Instance	Identification of the specific entity that was changed.
Parameter	The specific parameter that was changed (applicable only for MOD operation).
Operation	Type of change: ADD, DEL (Delete), MOD (Modify).
Changed From	The value of the parameter before the change (applicable only for MOD operation). In a Summarized Report this is the value at the Start Date of the report.
Changed To	The value of the parameter after the change (applicable only for MOD operation). In a Summarized Report this is the value after the last change to the parameter during the report's interval.
Changed By	The user that made the change. In a Summarized Report this is the user that made the last change to the relevant parameter.

Parameter	Description
Changed At	Time and date of the change. In a Summarized Report this is the time and date of the last change to the relevant parameter.
Record Data	Click on the Record Data link to open a Configuration History Record Data window providing all configuration details of the relevant Group's Instance.
Link To	A Go To section cut-through link to the relevant configuration page in the Device Manager (or to the general Site page if there is no configuration page for the Group).

2.7.3.3 CPE Equipments List

This section includes:

- CPE Equipments List Parameters
- Performing Cut-through to CPE Management Applications

2.7.3.3.1 CPE Equipments List Parameters

The default CPE Equipments list includes the following parameters for each CPE:

- MAC Address
- Serial Number
- Product Model
- Last Connection Date
- Serving BS ID
- Map Location with a **Show On Map** cut-through link. For details refer to Section 2.7.3.3.2 below.
- Software Version
- Management/Performance Application with cut-through links to relevant management applications. For details refer to Section 2.7.3.3.3 below.

2.7.3.3.2 Switching to Map View for a selected CPE

Click on the **Show On Map** cut-through link to view the CPE's location on a map. This is applicable only if at least one of the following conditions is fulfilled:

- The CPE is served by a BTS with known coordinates.
- The geolocation information (Latitude/Longitude) of the CPE is stored in the system (see "Using the CPEs Import Utility" on page 22).
- The Latitude/Longitude information is not available, but the address information of the CPE is stored in the system (see "Using the CPEs Import Utility" on page 22) and the system can find the geolocation based on this address using Bing Maps Geolocation Services (see more details below).

The system will display messages indicating missing information.

If only the address of the CPE is known, the system will try finding its coordinates using Bing Maps Geolocation Services:

- If the geolocation service fails, the system will notify the user about the existence of an address which cannot be mapped to latitude/longitude coordinates, and will display the CPE in the center of the serving sector.
- If the geolocation services returned one result, the latitude/longitude coordinates will be stored and the CPE will be displayed in its geolocation. This CPE will no longer be available in the ACS CPEs without Lat/Long search results.
- If the geolocation services returned more than one result, a list of options will be presented to the user. The latitude/longitude coordinates of the selected location will be stored and the CPE will be displayed in the selected geolocation. This CPE will no longer be available in the ACS CPEs without Lat/Long search results.

The system will display for several seconds a blinking CPE icon at its geolocation (if available). Otherwise, the icon will be displayed at the center of the serving sector. The contour of the serving sector also will also blink together with the CPE's icon.

2.7.3.3.3 Performing Cut-through to CPE Management Applications

The Management/Performance Application column includes cut-through links to StarACS and StarQuality.

Click on the **StarACS** cut-through link to open in a separate window the StarACS in the specific CPE context.

Click on the **StarQuality** cut-through link to open the StarQuality in the specific CPE context.

2.7.3.4 Pre-Defined Searches Lists

The lists for pre-defined searches are:

- 4Motion BTS searches: A list with up to 20 entries (up to 10 entries for Bottom 10 Uptime search), providing for each BTS the following details:
  - » Site Name
  - » Management IP Address
  - » Management/Performance Application cut-through links
  - » Site Coordinates with Show On Map link (if applicable)
  - » The value of the relevant search parameter (Throughput, Air Link Utilization, CPE Count, Uptime) that is used also as sorting parameter.

  Top searches are sorted in descending order, bottom searches are sorting in ascending order.

- Extreme BTS searches: A list with up to 10 entries, providing for each BTS the same details as for a simple BTS search (see "BTS Equipments List Parameters" on page 42), plus the number of relevant events (Number of Events) that is used also as sorting parameter. Top searches are sorted in descending order.
- CPE
  - CPEs Registered Since: CPE Registered since list containing all CPEs registered since the specified date, providing for each CPE the following details:
    - Serial Number
    - MAC Address
    - Creation Date (the date when the CPE was added to the ACS database)
    - Serving BS ID
    - Map Location with a **Show On Map** cut-through link. For details refer to Section 2.7.3.3.2.
    - Management/Performance Application with cut-through links to relevant management applications. For details refer to Section 2.7.3.3.3.
    - Product Model
    - Last Connection Date
    - Software Version
  - CPEs Rebooted Since: CPE Registered since list containing all CPEs rebooted since the specified date, providing for each CPE the following details:
    - MAC Address
    - Serial Number
    - Product Model
    - Last Connection Date
    - Serving BS ID
    - Map Location with a **Show On Map** cut-through link. For details refer to Section 2.7.3.3.2.
    - Software Version
    - Management/Performance Application with cut-through links to relevant management applications. For details refer to Section 2.7.3.3.3.
    - Reboot Count
  - CPEs Not Updated Since: CPE not Updated since list containing all CPEs not updated since the specified date, providing for each CPE the following details:
    - Serial Number

- MAC Address
- Last Connection Date
- Serving BS ID
- Map Location with a **Show On Map** cut-through link. For details refer to Section 2.7.3.3.2.
- Management/Performance Application with cut-through links to relevant management applications. For details refer to Section 2.7.3.3.3.
- Product Model
- Software Version

» ACS CPEs without Lat/Long: A list containing CPEs that were loaded using the CPEs Import utility that have address information and do not have complete latitude and longitude information. The list includes also CPEs that were loaded with address information and later the address information was deleted (either by loading an "ADDR" CPEs file with null information for the CPE or through the location edit feature). The list provides for each CPE the following details:

- Serial Number
- Address
- City
- Country
- Latitude
- Longitude
- Edit location link (see Editing CPE Location Details below)

» ACS CPEs without Address: A list containing CPEs that were loaded using the CPEs Import utility that have latitude and longitude information and do not have complete address information. The list includes also CPEs that were loaded with latitude/longitude information and later the latitude/longitude information was deleted (either by loading a "LATLONG" CPEs file with null information for the CPE or through the location edit feature). The list provides for each CPE the following details:

- Serial Number
- Address
- City
- Country
- Latitude
- Longitude

◊ Edit location link (see Editing CPE Location Details below)

2.7.3.5 Editing CPE Location Details

Click on the **Edit location** link of a CPE entry in either CPEs without Lat/Long or CPEs without Address to open the Edit CPE location window.

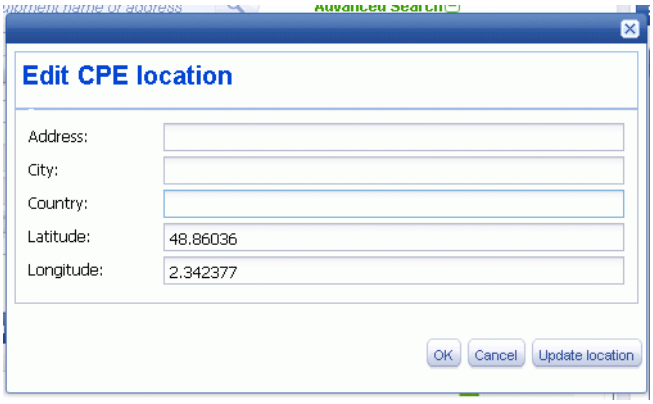


Figure 2-18: Edit CPE location

The Edit CPE location window enables updating/adding/deleting address (Address, City, Country) and geolocation (Latitude, Longitude) information for the CPE.

Note that even if you delete all location information for a CPE it will remain in the ACS CPEs without Address/ACS CPEs without Lat/Long search results. CPEs will be removed from these lists only if both address and geolocation details exist (either through manual editing or through geolocating an address using Bing Maps Geolocation Services).

Click **OK** to store the changes in the management system.

Click **Cancel** to cancel the changes.

Click **Update location** to try geolocating the updated address:

- If the geolocation service returned one result, the Latitude and Longitude information will be updated accordingly. Click **OK** to store the changes. The CPE will no longer be included in search results for ACS CPEs without Address/ACS CPEs without Lat/Long.
- If the geolocation service returned more than one results, you will be presented by a list of options. After selecting the preferred option, the Latitude and Longitude information will be updated accordingly. Click **OK** to store the changes. The CPE will no longer be included in search results for ACS CPEs without Address/ACS CPEs without Lat/Long.
- If the geolocation service did not return any result, you will get a message indicating the failure to geolocate the specified address.

2.7.4 Map View

This section includes:

- Map View Controls
- Map Refresh and Detach Controls
- Address Search
- Map Overlay
- Viewing Site Details

2.7.4.1 Map View Controls

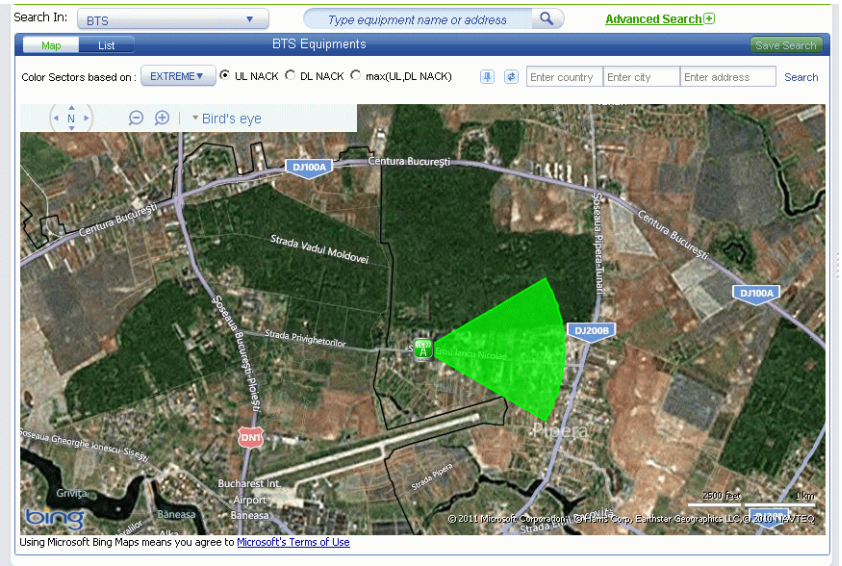


Figure 2-19: Map View

The standard map view controls are located on the top left corner of the map:

Table 2-7: Map View Controls

Control	Description
Pan	Click once to pan the map in the selected direction. To pan continuously, click and hold in the required direction. Alternatively, click and hold anywhere in the map area and drag in the required direction.
Zoom In (-)/Zoom Out (+)	Click once to zoom in/zoom out. You can also place the mouse over the Zoom In/Zoom Out controls to open the zoom slider.

Table 2-7: Map View Controls

Control	Description
View Type selection	Place the mouse over the selected view type to open the view type selection window. The available views are: ■ Road ■ Bird's eye (enabling control of showing/hiding labels and of angled views) ■ Automatic (best view type according to zoom in/out status)

2.7.4.2 Map Refresh and Detach Controls

The Refresh and Detach icons are located above the map:

Table 2-8: Map Refresh and Detach Controls

Icon	Description
	**Detach Mode** - opens the map in a new window. Click Esc to return.
	**Refresh** - refreshes the overlay information.

2.7.4.3 Address Search

The address search text boxes are located on the top right corner of the map. Enter required address details and click **Search**. The relevant map will be displayed, centered on the entered address, having the standard location icon pointing to exact address on map.

2.7.4.4 Map Overlay

Devices with known coordinates are presented on the map by suitable icons. Icon's color shall represent summarized alarm severity of the specific device, using AlvariSTAR set of colors. For co-located (or nearly-located) devices, the number of devices is displayed, with a color representing the highest summarized alarm severity. You can click on the icon to open separate icons for the co-located/nearly-located devices.

For each BTS, the associated BSs (sectors) are presented as equilateral triangles pointing outward of the BTS icon, at the approximate sector's heading and width as defined in the device. In the current release, sector's icon size will represent a fixed radio range: 500 meters for 4Motion, 2 km for Extreme.

Place the mouse over a sector to open an information bubble with BS details (BS ID and Sector Name).

Click on the **Refresh** button to refresh overlay information.

2.7.4.5 Key Performance Indicators

BS's sector color is according to its current Key Performance Indicator (KPI) value. The Color Sectors based on controls above the map enables selection of the KPI to be used for each device family.

2.7.4.5.1 4Motion Key Performance Indicators

KPIs for 4Motion devices are based on information recorded for the last 15-minutes period for which there is available data regarding the relevant BS. Details on KPIs and their representative colors are shown below.

Table 2-9: 4Motion KPI Details

KPI	Full Name	Name in StarQuality
SINR	SINR distribution Downlink less than 5dB	SINR Distribution Downlink - SINR <= 4dB
ALU	DL Data Zone utilization	DL Air Link Utilization, Data Zone
Throughput	Average BS Throughput	DL Throughput Total

Table 2-10: KPI Representative Colors

KPI	Units	Value	Color
SINR	%	0-10	Green
		10-20	Yellow
		20-30	Orange
		30-40	Red
		40-50	Purple
		50 and above	Blue
ALU	%	0-30	Green
		30-50	Yellow
		50-70	Orange
		70-80	Red
		80-90	Purple
		90-100	Blue

Table 2-10: KPI Representative Colors

KPI	Units	Value	Color
Throughput	bps	Above 8,000,000	Green
		3,000,001-8,000,000	Yellow
		2,000,001-3,000,000	Orange
		1,000,001-2,000,000	Red
		500,000-1,000,000	Purple
		0-500,000	Blue

BS sectors are presented as a hollow triangle (Black line, no fill) in the following cases:

1. StarQuality is not included in the specific installation.
2. StarQuality does not have data regarding the specific BS in the last 15-minutes period.

2.7.4.5.2 Extreme Key Performance Indicators

KPIs for Extreme devices are based on real-time counters taken every 5 minutes from each device using SNMP. Details on KPIs and their representative colors are shown below.

Table 2-11: Extreme KPI Details

KPI	Description
UL NACK	Uplink NACK rate. Computed using the following formula: UL NACK = 100*SUM(NACK Frames/ACK Frames)/Number of MSs. where: NACK Frames=number of non-acknowledged uplink frames per MS during the last 5 minutes interval. ACK Frames= number of acknowledged uplink frames per MS during the last 5 minutes interval. Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.

Table 2-11: Extreme KPI Details

KPI	Description
DL NACK	Downlink NACK rate. Computed using the following formula: DL NACK = 100*SUM(NACK Frames/ACK Frames)/Number of MSs. where: NACK Frames=number of non-acknowledged downlink frames per MS during the last 5 minutes interval. ACK Frames= number of acknowledged downlink frames per MS during the last 5 minutes interval. Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.
max(UL,DL NACK)	The maximum value of UL NACK and DL NACK (described above)

Table 2-12: KPI Representative Colors

KPI	Units	Value	Color
UL NACK	%	0-2.9999	Green
		3-9.9999	Yellow
		10 and above	Red
DL NACK	%	0-2.9999	Green
		3-9.9999	Yellow
		10 and above	Red
max (UL,DL NACK	%	0-2.9999	Green
		3-9.9999	Yellow
		10 and above	Red

BS sectors are presented as a hollow triangle (black line, no fill) if the KPI value, or one of the KPI values for max(UL,DL NACK), is not available for the last 5 minutes interval:

2.7.4.6 Viewing Site Details

Click on a device's icon to open the Site Details bubble.

The Site Details bubble comprises the following tabs:

- Site Tab
- Sectors Tab
- KPIs Tab

2.7.4.6.1 Site Tab

Figure 2-20: Site Tab (4Motion)

Click on the **AlvariSTAR** cut-through link to open in a separate window the AlvariSTAR application in the specific device's context.

Click on the **StarQuality** cut-through link to open in a separate window the StarQuality application (if applicable) in the specific device's context.

2.7.4.6.2 Sectors Tab

Figure 2-21: Sectors Tab (4Motion)

If needed, use the scroll bar to view the details of available sectors (BSs).

Click on the **StarQuality** cut-through link to open in a separate window the StarQuality application (if applicable) in the specific sector (BS) context.

Click on the **Show Neighbor(s)** link (applicable only for 4Motion devices) to visualize the sectors (BSs) associated as neighbors to the sector (B)S. If there are any neighbor(s) defined for the sector, the system will zoom and move the map to an appropriate resolution and location so that each involved sector is clearly visible, and display a highlighting animation of the sector together with its neighbors for several seconds by drawing the contour of the involved sectors.

Check the **Show CPEs** check-box to display the CPEs served by the sector (BS). The default is de-selected (CPEs not shown). If **Show CPEs** option is selected, a CPE icon will appear on the right side of the option. Click on the CPE icon to enable selection of icon color for CPEs served by this sector. Only "connected" CPEs will be displayed: "Connected" 4Motion CPEs include all CPEs available in the database of StarQuality that had at least one collection in the last 24 hours (including CPEs not available in the database of StarACS). "Connected" Extreme CPEs include all CPEs available in the database of AlvariSTAR (including CPEs not available in the database of StarACS). Icons for CPEs with a known geolocation served by the sector will be displayed in their defined geolocations. For CPEs without a known geolocation, a CPE icon will be displayed at the center of the serving sector's area. A single icon will be shown for two or more CPEs without a known geolocation or in the same geolocation, with the number of CPEs indicated on the icon. Click on the icon to view CPE(s) details:

- If the number indicating the quantity of CPEs is higher than 10, a bubble with CPEs Information table will open displaying main details for each CPEs. By default the table is sorted by ascending order of CPEs Serial Number.
- If the number is 10 or lower, the CPEs display will be "expanded" with an icon for each CPE. Click on a CPE icon to open a bubble with its details.
- For a single CPE, click on the CPE icon to open a bubble with its details.

2.7.4.6.3 KPIs Tab

This section includes:

- 4Motion KPIs Tab
- Extreme KPIs Tab

2.7.4.6.3.1 4Motion KPIs Tab

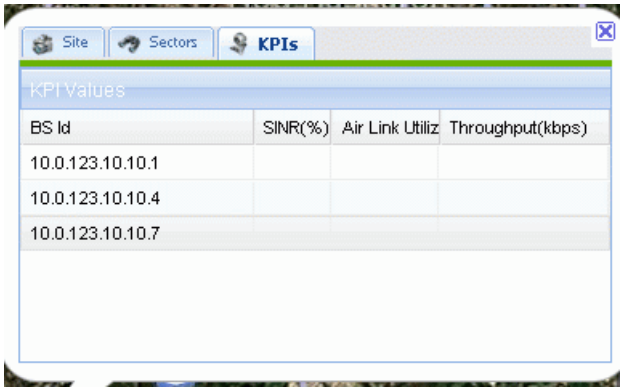


Figure 2-22: KPIs Tab (4Motion)

The 4Motion KPIs tab includes the following KPIs for each sector (based on StarQuality measurements):

- **SINR(%)**: SINR Distribution Downlink less than 5dB
- **Air Link Utilization(%)**: DL Data Zone Air Link Utilization

- **Throughput(kbps)**: Average BS DL Total Throughput

2.7.4.6.3.2 Extreme KPIs Tab

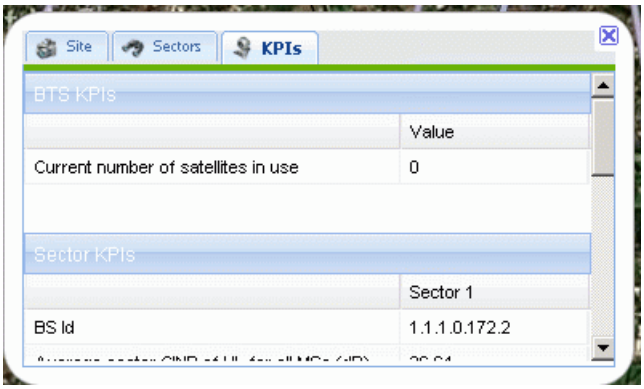


Figure 2-23: KPIs Tab (Extreme)

Extreme KPIs (based on last received values of SNMP parameters/real-time counters) include:

- BTS KPI includes: **Current number of satellites in use**.
- Sector KPIs include (per sector/BS)
  - **Average sector CINR of UL for all served MSs(dB)**: Sum over all MSs of last Uplink CINR measurement divided by the number of served MSs.
  - **Average sector CINR of DL for all served MSs(dB)**: Sum over all MSs of last Downlink CINR measurement divided by the number of served MSs.
  - **UL modulation rate number in use per sector**: Rounded sum over all MSs of last Uplink Modulation Number divided by the number of served MSs.

Table 2-13: Uplink Modulation Number

Rate	Modulation Number
QPSK-CTC-1/2 REP4	1
QPSK-CTC-1/2 REP2	2
QPSK-CTC-1/2	3
QPSK-CTC-3/4	4
QAM16-CTC-1/2	5
QAM16-CTC-3/4	6
QAM64-CTC-2/3	8
QAM64-CTC-3/4	9

Table 2-13: Uplink Modulation Number

Rate	Modulation Number
QAM64-CTC-5/6	10

» **DL modulation rate number in use per sector**: Rounded sum over all MSs of last Uplink Modulation Number divided by the number of served MSs.

Table 2-14: Downlink Modulation Number

Rate	Modulation Number
QPSK-CTC-1/2 REP4, MIMO A	1
QPSK-CTC-1/2 REP2, MIMO A	2
QPSK-CTC-1/2, MIMO A	3
QPSK-CTC-3/4, MIMO A	4
QAM16-CTC-1/2, MIMO A	5
QAM16-CTC-3/4, MIMO A	6
QAM64-CTC-2/3, MIMO A	8
QAM64-CTC-3/4, MIMO A	9
QAM64-CTC-5/6, MIMO A	10
QPSK-CTC-1/2 REP4, MIMO B	11
QPSK-CTC-1/2 REP2, MIMO B	12
QPSK-CTC-1/2, MIMO AB	13
QPSK-CTC-3/4, MIMO B	14
QAM16-CTC-1/2, MIMO B	15
QAM16-CTC-3/4, MIMO B	16
QAM64-CTC-2/3, MIMO B	18
QAM64-CTC-3/4, MIMO B	19
QAM64-CTC-5/6, MIMO B	20

» **UL NACK rate**: 100*SUM(NACK Frames/ACK Frames)/Number of MSs.

where:

NACK Frames=number of non-acknowledged uplink frames per MS during the last 5 minutes interval.

ACK Frames= number of acknowledged uplink frames per MS during the last 5 minutes interval.

Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.

- **DL NACK rate**: 100*SUM(NACK Frames/ACK Frames)/Number of MSs.

  where:

  NACK Frames=number of non-acknowledged downlink frames per MS during the last 5 minutes interval.

  ACK Frames= number of acknowledged downlink frames per MS during the last 5 minutes interval.

  Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.

- **UL Dropped bursts**: 100*SUM(Dropped Frames/ACK Frames)/Number of MSs.

  where:

  Dropped Frames=number of dropped uplink frames per MS during the last 5 minutes interval.

  ACK Frames= number of acknowledged uplink frames per MS during the last 5 minutes interval.

  Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.

- **DL Dropped bursts**: 100*SUM(Dropped Frames/ACK Frames)/Number of MSs.

  where:

  Dropped Frames=number of non-acknowledged downlink frames per MS during the last 5 minutes interval.

  ACK Frames= number of acknowledged downlink frames per MS during the last 5 minutes interval.

  Note: if for a certain MS number of acknowledged frames is zero, the MS shall not be taken into consideration when performing the average.

- BS KPIs include (per BS):
  - **UL Frame Utilization**: 100*(UL Used Slots/UL Total Slots).

where:

UL Used Slots=number of slots used in the uplink during the last 5 minutes interval.

UL Total Slots=total number of slots available in the uplink during the last 5 minutes interval.

» **DL Frame Utilization**: 100*(DL Used Slots/DL Total Slots).

where:

DL Used Slots=number of slots used in the downlink during the last 5 minutes interval.

DL Total Slots=total number of slots available in the downlink during the last 5 minutes interval.

2.8 Managing Graphs, Charts and Reports

The Network section includes a customizabe set of operational, inventory and performance graphs, charts, and reports for all managed entities.

This section includes:

- The Settings Section
- The Graphs/Charts/Reports Section

2.8.1 The Settings Section

This section includes:

- Accessing the Settings Section
- Setting the Columns Layout
- Selecting Graphs/Charts/Reports to be Displayed

2.8.1.1 Accessing the Settings Section

By default the Settings section is hidden. To open the Settings section, click on the Show Settings button ( ) on the top right corner of the Network section. If needed, you may change the size of the displayed Settings section by placing the mouse on the separation line between the Settings and graphs sections and dragging it to the desired location.

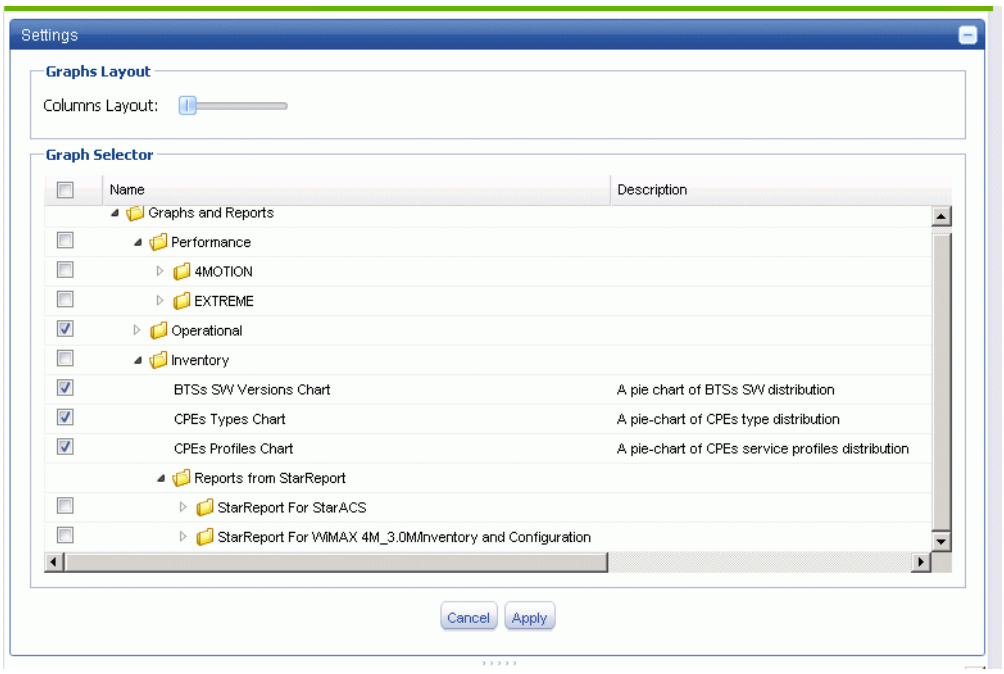


Figure 2-24: The Settings Section

2.8.1.2 Setting the Columns Layout

Use the Columns Layout slider to set the number of columns (1, 2, or 3) to be used for displaying selected graphs/charts/reports. The default is 1 column. Note that the usability of this feature depends on the relative width dedicated for the Network section (see "Re-sizing the Search and Network sections" on page 26).

2.8.1.3 Selecting Graphs/Charts/Reports to be Displayed

By default, all supported graphs and charts are displayed, and all reports are not displayed (pending on availability of the relevant management application).

The Graph Selector enables selecting/de-selecting graphs/charts/reports to be displayed.

To Select/De-Select Graphs:

1. Click on the Expand symbol to the left of the Graphs and Reports icon to view the available groups (Operational, Performance (4Motion and Extreme), and Inventory, depending on availability of the relevant management application). In addition to specific graphs/charts, the Inventory group includes also the Reports from StarReport group, with 2 sub-groups: StarReport For StarACS and StarReport for WiMAX.
2. Click on the Expand symbol to the left of a selected group icon to view the available graphs/charts/reports belonging to the group. For each graph/chart/report the following parameters are available:
   - Select/de-select check box (available also for each group)
   - Name
   - Description
3. Select/de-select specific groups or specific graphs/charts/reports according to your current preferences.
4. To cancel all changes-click on the **Cancel** button.
5. To apply all changes-click on the **Apply** button.

To hide the Settings section, click on the Hide Settings button ( ) on the top right corner of the Network section.

2.8.2 The Graphs/Charts/Reports Section

This section includes:

- Rearranging Order of Graphs/Charts

- Managing a Graph/Chart
- Viewing Graph/Chart Detailed Information

2.8.2.1 Rearranging Order of Graphs/Charts

To rearrange order of graphs/charts, click and drag the title bar of a graph/chart to the new desired position.

INFORMATION

It is easier to rearrange order of graphs/charts if you first hide them (see Section 2.8.2.2 below) so that only the title bar is visible, and hide also the Search section (increase Network section to its maximum size) to view all columns.

2.8.2.2 Managing a Graph/Chart

Each graph/chart includes the following controls:

Table 2-15: Graph/Chart Controls

Control	Description
Configure	Click to switch to configuration mode, allowing you to configure the following: ■ **Refresh Rate** (where applicable) ■ **Duration**: Applicable only for graphs. Each graph presents the relevant data using a time axis, ascending to the right. The right-most point is the last refreshed one. The left-most point is defined by the duration parameter. ■ **Hide Legends** check box. For all graphs and bar-charts the default is unchecked (show legends). For all pie-charts the default is checked (hide legends).
Full Screen	Click to use full screen for displaying the graph/chart. Click Esc to exit full screen mode.
	**Save Graph Configuration** - Click the button (on the top right corner) to save the current graph/chart configuration. The saved configuration will be the default for the specific user.
	**Hide Graph** - Click the button (on the top right corner) to hide the graph/chart. Only the title bar with the control buttons is displayed. The Hide Graph - sign is replaced by a Show Graph + sign, enabling to display again the graph/chart.

The following table provides details on supported graphs/charts and available values for configurable parameter. Default values are emphasized (bold).

Table 2-16: Supported Graphs/Charts and Configurable Parameters (excluding Extreme Performance Charts)

Name	Description	Refresh Rate	Duration
Operational Graphs and Charts			

Table 2-16: Supported Graphs/Charts and Configurable Parameters (excluding Extreme Performance Charts)

Name	Description	Refresh Rate	Duration
Alarms Graph	Linear graphs of no. of open BTS summarized alarms, classified per severity vs. time. Data Source: AlvariSTAR	10 seconds 20 seconds **1 minute** 2 minutes 5 minutes 10 minutes	1 minute 2 minutes 5 minutes 10 minutes **20 minutes** 1 hour 2 hours 5 hours 12 hours 24 hours
Alarms Distribution Chart	A bar-chart of no. of currently-open BTS summarized alarms, classified per severity. Data Source: AlvariSTAR	10 seconds 20 seconds **1 minute** 2 minutes 5 minutes 10 minutes	N/A
BTSs Management Chart	A pie-chart of BTS management status distribution. Data Source: AlvariSTAR	1 minute 2 minutes 5 minutes **10 minutes** 20 minutes 1 hour	N/A

Table 2-16: Supported Graphs/Charts and Configurable Parameters (excluding Extreme Performance Charts)

Name	Description	Refresh Rate	Duration
BTSs Management Graph	Linear graphs of BTS management status vs. time. Data Source: AlvariSTAR	1 minute 2 minutes 5 minutes **10 minutes** 20 minutes 1 hour	1 minute 2 minutes 5 minutes 10 minutes 20 minutes **1 hour** 2 hours 5 hours 12 hours 24 hours
BTSs Operability Chart	A pie-chart of BTS operational state distribution. Data Source: AlvariSTAR	1 minute 2 minutes 5 minutes **10 minutes** 20 minutes 1 hour	N/A
BTSs Operability Graph	Linear graphs of BTS operational state vs. time. Data Source: AlvariSTAR	1 minute 2 minutes 5 minutes **10 minutes** 20 minutes 1 hour	1 minute 2 minutes 5 minutes 10 minutes 20 minutes **1 hour** 2 hours 5 hours 12 hours 24 hours

Table 2-16: Supported Graphs/Charts and Configurable Parameters (excluding Extreme Performance Charts)

Name	Description	Refresh Rate	Duration
CPEs Registration Graph	A linear graph of no. of number of registered CPEs of the BTSs, vs. time. Applicable only for 4Motion CPEs Data Source: StarQuality	15 minutes **1 hour** 2 hours 5 hours 12 hours 24 hours	1 hour 2 hours **5 hours** 12 hours 24 hours
Inventory Charts			
BTSs SW Versions Chart	A pie chart of BTS SW versions distribution. Data Source: AlvariSTAR	1 minute 2 minutes 5 minutes 10 minutes 20 minutes **1 hour** 2 hours 5 hours 12 hours 24 hours	N/A
CPEs Types Chart	A pie-chart of CPEs type distribution. Data Source: StarACS	1 minute 2 minutes 5 minutes 10 minutes **20 minutes** 1 hour	N/A

Table 2-16: Supported Graphs/Charts and Configurable Parameters (excluding Extreme Performance Charts)

Name	Description	Refresh Rate	Duration
CPEs Profiles Chart	A pie-chart of CPEs service profiles distribution. Data Source: StarACS	1 minute 2 minutes 5 minutes **10 minutes** 20 minutes 1 hour	N/A
Performance Graph - 4Motion			
Total UL/ DL Throughput Graph	A linear graph of BTSs total throughput (sum of all relevant AUs throughput in the network), separately for uplink and downlink, vs. time. Data Source: StarQuality	15 minutes (fixed)	2 hours **5 hours** 12 hours 24 hours

In Extreme Performance charts, the Refresh Rate is fixed at 5 minutes and the Duration parameter is not applicable.

For each KPI, both a pie chart and a 3D bar chart are available.

Refer to "KPIs Tab" on page 56 for details on how relevant KPIs are computed.

Table 2-17: Supported Extreme Performance Charts

Name	Description
Number of Satellites in Use	A pie-chart/3D bar-chart displaying the percentage/number of devices with the "Current number of satellites in use" KPI having the following values: ■ Between 0 and 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 ■ 11 or more The system shall also represent on the chart the percentage/number of devices for which the system was unable to collect this KPI during the last 5 minutes interval.
Average sector CINR of UL for All MSs	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "Average sector CINR of UL for all served MSs" KPI having the following values: ■ Between 0 and 4 ■ Between 5 and 10 ■ Between 11 and 14 ■ Between 15 and 20 ■ 21 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.

Table 2-17: Supported Extreme Performance Charts

Name	Description
Average Sector CINR of DL for All MSs	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "Average sector CINR of UL for all served MSs" KPI having the following values: ■ Between 0 and 4 ■ Between 5 and 10 ■ Between 11 and 14 ■ Between 15 and 20 ■ 21 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.
UL Modulation Number in Use	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "UL modulation rate number in use per sector" KPI for each UL Rate. Note: There is no rate with modulation number 7. If the calculated KPI is between 6.5 and 7 inclusive, it is considered as 6 (QAM16-CTC-3/4). If the calculated KPI is between 7 and 7.5, it is considered as 8 (QAM64-CTC-2/3). The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.
DL Modulation Number in Use	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "DL modulation rate number in use per sector" KPI for each DL Rate. Note: There is no rate with modulation number 7. If the calculated KPI is between 6.5 and 7 inclusive, it is considered as 6 (QAM16-CTC-3/4, MIMO A). If the calculated KPI is between 7 and 7.5, it is considered as 8 (QAM64-CTC-2/3, MIMO A). There is also no rate with modulation number 17. If the calculated KPI is between 16.5 and 17 inclusive, it is considered as 16 (QAM16-CTC-3/4, MIMO B). If the calculated KPI is between 17 and 17.5, it is considered as 18 (QAM64-CTC-2/3, MIMO B). The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.

Table 2-17: Supported Extreme Performance Charts

Name	Description
UL NACK Rate	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "UL NACK rate" KPI having the following values: ■ Between 0 and 2.9999 (%) ■ Between 3 and 9.9999 (%) ■ 10 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.
DL NACK Rate	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "DL NACK rate" KPI having the following values: ■ Between 0 and 2.9999 (%) ■ Between 3 and 9.9999 (%) ■ 10 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.
UL Dropped Bursts	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "UL Dropped bursts" KPI having the following values: ■ Between 0 and 3 ■ Between 4 and 5 ■ 6 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.
DL Dropped Bursts	A pie-chart/3D bar-chart displaying the percentage/number of sectors with the "DL Dropped bursts" KPI having the following values: ■ Between 0 and 3 ■ Between 4 and 5 ■ 6 or more The system shall also represent on the chart the percentage/number of sectors for which the system was unable to collect this KPI during the last 5 minutes interval.

2.8.2.3 Viewing Graph/Chart Detailed Information

Mouse hovering over any active area of a graph/chart triggers the display of additional data:

- Chart: Legend and actual value of the area under mouse hovering.
- Graph: Actual time and Y-axis values for the time-axis value that matches the point of mouse hovering.

2.8.2.4 Managing Reports

Each Report includes the following controls:

Table 2-18: Report Controls

Control	Description
	**Hide Report** - Click the button (on the top right corner) to hide the displayed report. Only the title bar with the control button is displayed. The Hide Report - sign is replaced by a Show Report + sign, enabling to display again the report.
	**Show Entire Report** - Click the button (on the bottom right corner) to view the full report in a separate browser window. According to specific report type, the entire report may include additional (detailed) information (see details in descriptions of reports below).
	**Detach** - Click to view the displayed report in a separate window.
	**Schedule** - Click to open the Scheduler window, allowing you to change the refresh rate for the report. The available options are: ■ 15 minutes ■ 30 minutes ■ 1 hour ■ 2 hours ■ 3 hours ■ 6 hours ■ 12 hours ■ Daily The default for all reports is 1 hour. The system will remember modified refresh intervals for each user.
	**Refresh** - Click to refresh the displayed report. A "Generating the report. Please wait..." message will be displayed together with a ? icon. Click on the ? icon to cancel the refresh task.

2.8.2.5 Supported Reports

Reports are applicable only for 4Motion devices.

2.8.2.5.1 StarReport For StarACS Reports

Table 2-19: Supported StarReport For StarACS Reports

Name	Description
General CPE Inventory Report	A CPE Inventory Last Updated chart providing a vertical bar display of the quantity of CPEs vs. Update Date, over the whole network. Possible interval values for Update Date are: ■ Less than 1 day ■ Between 1 and 2 days ■ Between 2 and 5 days ■ More than 5 days The full report includes also the General CPE Inventory Report, a table providing extensive inventory details per CPE.
CPE Inventory by Type & SW Version	A pie-chart display of the quantity of CPEs by Type and SW Version, over the whole network. The full report includes also the CPE Inventory by software version table, providing per CPE details of Serial Number, MAC Address and Running SW Version.
CPE Inventory Last Updated	A CPE Inventory Last Updated chart providing a vertical bar display of the quantity of CPEs vs. Update Date, over the whole network. Possible interval values for Update Date are: ■ Less than 1 day ■ Between 1 and 2 days ■ Between 2 and 5 days ■ More than 5 days The full report includes also the CPE Inventory Last Updated table, providing per CPE details such as Running SW Version, Uptime and Updated Date.
Duplicate CPEs	A Duplicate CPEs by Serial Number table providing details for duplicate Serial Numbers, providing the first 10 duplicates (if they exist). The full report includes also the Duplicate CPEs by MAC Address table providing similar details for duplicate MAC Addresses

Table 2-19: Supported StarReport For StarACS Reports

Name	Description
Number of CPEs per BS	This report provides a vertical bar of Number of CPEs per BS for different quantities. The possible quantities of CPEs are: ■ 0 - 10 ■ 11 - 20 ■ 21 - 30 ■ 31 - 40 ■ 41 - 50 ■ 51 - 60 ■ 61 - 70 ■ 71 - 80 ■ 81 - 90
Top N Serving BS ID	A table providing BS ID and number of CPEs details of top 10 Serving BS IDs based on number of CPEs served by each BS.
Bottom N Serving BS ID	A table providing BS ID and number of CPEs details of bottom 10 Serving BS IDs based on number of CPEs served by each BS.

2.8.2.5.2 StarReport for WiMAX Reports

Table 2-20: Supported StarReport for WiMAX Reports (from AlvariSTAR)

Name	Description
Total Network Inventory per Location	A Total Network Inventory per Location Chart, providing a vertical bar display of the number of Network Elements (NE) of each type per location. The full report includes also the Total Network Inventory per Location table, providing the number of Network Elements (NE) of each type per location.
Detailed Network Inventory per Location	Detailed Network Inventory per Location table, providing the number of hardware components (such as various cards, ODUs, Antennas, GPS) for each Network Elements per location.
NPU Card Details per Location	A Number of BTS vs. Hardware Version/Revision Number pie-chart, providing NPU by hardware version-revision pair distribution over the entire network. The full report includes also: ■ Number of BTS vs. Software Version pie-chart, providing NPU by software version distribution over the entire network. ■ NPU Card HW Details per Location table, providing various NPU inventory details per location.

Table 2-20: Supported StarReport for WiMAX Reports (from AlvariSTAR)

Name	Description
AU Card Details per Location	AU HW Distribution pie-chart, providing AU by Hardware Version/Revision Number pair distribution over the entire network. The full report includes also: ■ AU Card Details per Location table, providing various AU inventory details for each AU per location. ■ AU Type Distribution pie-chart, providing AU by type distribution over the entire network. ■ AU SW Distribution pie-chart, providing AU by Boot Version/Operating Version pair distribution over the entire network.
ODU Details per Location	ODU Type Distribution pie-chart, providing ODU by type distribution over the entire network. The full report includes also ODU Details per Location table, providing inventory details for each ODU per location.
Antenna Type per Location	A Antenna Types Distribution pie-chart, providing Antenna by product type distribution over the entire network. The full report includes also Antenna Types per Location table, providing the number of antennas for each product type defined per location.
Quick View Configuration	A Quick View Configuration table providing for each BS selected configuration details for some General, Permutation, Map, Power Control and Basic Rate parameters.
Detailed View Configuration	A Detailed View Configuration table providing for each BS comprehensive configuration details for Frame Structure, Permutation, Basic Rate, Power Control, Mobility and Beam Forming parameters.
Neighboring Relation Configuration	A Neighboring Relation Configuration table providing for each BS the defined triggers (type and value) for each defined neighbor.
Consistency Check Configuration	Consistency Check Configuration tables providing actual and desired values per BS for each parameter from Frame Structure, Basic Rate, Power Control, Mobility, Beam Forming

Upon clicking the **Refresh** button in a per location report, you will be prompted to specify a filter for a specific NE Type (in Network Inventory reports) or a specific BTS (by its IP Address). Do not specify any value to generate a report for the entire managed network.